Go To Table Of Contents

411

-011 thru -018

Power Examination Table

MIDMARK®

Service and Parts Manual

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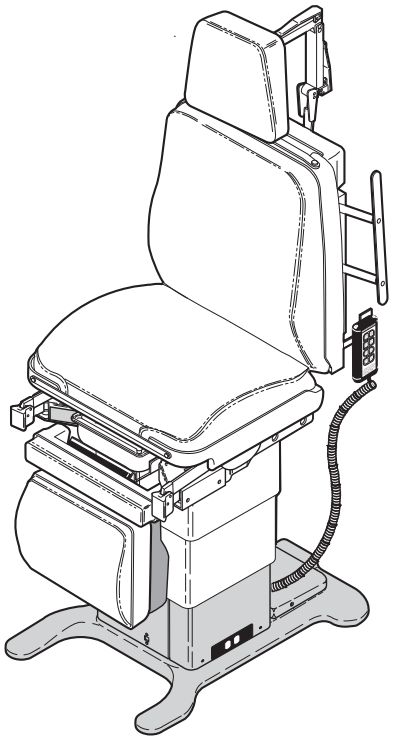

411 -011 thru -018

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Go To Table Of Contents

TABLE OF CONTENTS

Section/Paragraph.....Page

IMPORTANT INSTRUCTIONS
General Safety Instructions iii
Safety Alert Symbols iii
Warranty Instructions iii

SECTION I GENERAL INFORMATION
1.1 Scope of Manual 1-1
1.2 How to Use Manual 1-1
1.3 Description Of 411 (75L) Power Examination Table 1-1
1.4 Standard Torque Specifications..... 1-6
1.5 Specifications 1-7
1.6 Parts Replacement Ordering..... 1-7
1.7 Special Tools 1-9

SECTION II TESTING AND TROUBLESHOOTING
2.1 Operational Test 2-1
2.2 Troubleshooting Procedures..... 2-5

SECTION III SCHEDULED MAINTENANCE
3.1 Scheduled Maintenance 3-1

SECTION IV MAINTENANCE/SERVICE INSTRUCTIONS
4.1 Introduction..... 4-1
4.2 PC Control Board Calibration (Programmable Tables Only)..... 4-1
4.3 PC Control Board Removal / Installation (Non-Programmable Tables Only)..... 4-2
4.4 PC Control Board Removal / Installation (Programmable Tables Only)..... 4-3
4.5 Tilt Actuator Removal / Installation..... 4-4
4.6 Tilt Capacitor Removal / Installation 4-7
4.7 Back Actuator Removal / Installation..... 4-8
4.8 Back Capacitor Removal / Installation..... 4-11
4.9 Back Actuator Limit Switch Removal / Installation / Adjustment (Early Units Only)..... 4-12
4.10 Headlock Limit Switch Removal / Installation / Adjustment (Early Units Only)..... 4-14
4.11 Foot Actuator Removal / Installation..... 4-16
4.12 Foot Capacitor Removal / Installation..... 4-18
4.13 Base Actuator Removal / Installation..... 4-19
4.14 Base Capacitor Removal / Installation..... 4-22
4.15 Column Assembly Removal / Installation ... 4-23
4.16 Typical Actuator Motor / Actuator Brake Removal / Installation..... 4-28

Section/Paragraph ..... Page

4.17 Base Down Limit Switch Removal / Installation / Adjustment..... 4-29
4.18 Base Up Limit Switch Removal / Installation / Adjustment..... 4-31
4.19 Pan Safety Limit Switch Removal / Installation / Adjustment..... 4-32
4.20 Chain Tension Check / Adjustment 4-34
4.21 Eccentric Bearings Adjustment..... 4-35
4.22 Hand / Foot Inlet PC Board Removal / Installation..... 4-37
4.23 Hand Control Switch Panel Removal / Installation (Early Non-Programmable Units)..... 4-38
4.24 Hand Control Switch Panel Removal / Installation (Early Programmable Units) 4-39
4.25 Hand Control PC Board Removal / Installation (Early Programmable Units) . 4-39
4.26 Hand Control PC Board Removal / Installation (Later Units)..... 4- 41
4.27 Foot Control PC Board Removal / Installation (Early Units)..... 4-41
4.28 Foot Control Top Removal / Installation (Later Non-Programmable Units)..... 4-42
4.29 Foot Control Top Removal / Installation (Later Programmable Units)..... 4-43
4.30 Foot Control PC Board Removal / Installation (Later Units)..... 4-44
4.31 Typical Foot Control *Foot Pedal* Switch Removal / Installation (Early Units)..... 4-44
4.32 Typical Foot Control *Function Button* Switch Removal / Installation (Early Programmable Units) 4-45
4.33 Typical Foot Control *Foot Pedal* Switch Removal / Installation (Later Units)..... 4-46
4.34 Typical Foot Control *Function Button* Switch Removal / Installation (Later Units)..... 4-46
4.35 Typical Foot Control Lamp Removal / Installation (Early Programmable Units) . 4-47
4.36 Typical Foot Control Lamp Removal / Installation (Later Units)..... 4-48
4.37 Headrest Adjustment 4-49
4.38 Headrest Handles Handle Stops Adjustment..... 4-50
4.39 Stirrup Assembly Removal / Installation..... 4-50
4.40 Foot Position Sensor Removal / Installation / Adjustment (Programmable Units Only) . 4-51

(*) Indicates that there has been a serial number break for the illustration and that there are additional point page(s) following the original page.

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TABLE OF CONTENTS

Section/Paragraph..... Page

4.41 Tilt Position Sensor Removal / Installation / Adjustment (Programmable Units Only)..... 4-54
4.42 Back Position Sensor Removal / Installation / Adjustment (Programmable Units Only)..... 4-58
4.43 Base Position Sensor Removal / Installation / Adjustment (Programmable Units Only)..... 4-61
4.44 Fuse Removal / Installation (230 VAC Units Only) 4-65
4.45 AC Receptacle Removal / Installation (230 VAC Units Only) 4-66
4.46 Fuse Holder Removal / Installation (230 VAC Units Only) 4-67
4.47 Choke Assembly Inlet Harness Removal / Installation (230 VAC Units Only)..... 4-67

SECTION V SCHEMATICS AND DIAGRAMS
5.1 Electrical Schematics / Wiring Diagrams ..... 5-1.*

SECTION VI PARTS LIST
6.1 Introduction 6-1
6.2 Description Of Columns 6-1
6.3 Torque Specifications And Important Assembly Notes 6-1
Pictorial Index (411-011) 6-2
Pictorial Index (411-012) 6-3
Pictorial Index (411-013) 6-4
Pictorial Index (411-014) 6-5
Pictorial Index (411-016) 6-6
Pictorial Index (411-017) 6-7
Pictorial Index (411-018) 6-8

Section/Paragraph ..... Page

Upholstery Set - Styled (Standard) 6-9
Upholstery Set - Plain (Optional) 6-10
Headrest Components ..... 6-11.*
Headlock Assembly..... 6-12.*
Back Components (115 VAC Units) ..... 6-13.*
Back Components (230 VAC Units) ..... 6-14.*
Seat Components 6-15
Stirrup Assembly..... 6-16.*
Leg Components (115 VAC Units) ..... 6-17.*
Leg Components (230 VAC Units) 6-18
Base Cover Comp. (115 VAC Units) 6-19
Base Cover Comp. (230 VAC Units) 6-20
Base Electrical Comp. (115 VAC Units) ... 6-21.*
Base Electrical Comp. (230 VAC Units) ... 6-22.*
Power Inlet Components (230 VAC Units) 6.23
Column Components 6-24
Column Assembly 6-25
Hand Control Assm. (Non-Programmable) 6-26
Hand Control Assm. (Programmable)..... 6-27
Hand Control Assm. (Programmable)..... 6-28
Hand Control Assm. (Non-Programmable) ..... 6.29.*
Program Position Components 6-30
Base Reducer Assembly..... 6-31
Foot Sensor Components 6-32
Back Sensor Components 6-33
Tilt Sensor Components 6-34
Foot Control Assm. (Programmable) 6-35

COMMENTS..... 7-1
FAX ORDER FORM..... 7-2

(*) Indicates that there has been a serial number break for the illustration and that there are additional point page(s) following the original page.

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General Safety Instructions

Safety First: The primary concern of Midmark Corporation is that this table is maintained with the safety of the patient and staff in mind. To assure that services and repairs are completed safely and correctly, proceed as follows:

(1) Read this entire manual before performing any services or repairs on this table.

(2) Be sure you understand the instructions contained in this manual before attempting to service or repair this table.

Safety Alert Symbols

Throughout this manual are safety alert symbols that call attention to particular procedures. These items are used as follows:

DANGER

A DANGER is used for an imminently hazardous operating procedure, practice, or condition which, if not correctly followed, will result in loss of life or serious personal injury.

WARNING

A WARNING is used for a potentially hazardous operating procedure, practice, or condition which, if not correctly followed, could result in loss of life or serious personal injury.

CAUTION

A CAUTION is used for a potentially hazardous operating procedure, practice, or condition which, if not correctly followed, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

EQUIPMENT ALERT

An EQUIPMENT ALERT is used for an imminently or potentially hazardous operating procedure, practice, or condition which, if not correctly followed, will or could result in serious, moderate, or minor damage to unit.

NOTE

A NOTE is used to amplify an operating procedure, practice or condition.

Warranty Instructions

Refer to the Midmark “Limited Warranty” printed in the Installation and Operation Manual for warranty information. Failure to follow the guidelines listed below will void the warranty and/or render the 411 (75L) Power Examination Table unsafe for operation.

- In the event of a malfunction, do not attempt to use the examination table until necessary repairs have been made.
- Do not attempt to disassemble table, replace malfunctioning or damaged components, or perform adjustments unless you are one of Midmark’s authorized service technicians.
- Do not substitute parts of another manufacturer when replacing inoperative or damaged components. Use only Midmark replacement parts.

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Return To Table Of Contents

TABLE OF CONTENTS

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SECTION I
GENERAL INFORMATION

1.1 Scope of Manual

This manual contains detailed troubleshooting, scheduled maintenance, maintenance, service instructions, and a complete illustrated parts breakdown for the 411(75L) Power Examination Table. This manual covers all programmable and non-programmable versions of this table. This manual is intended to be used by Midmark's authorized service technicians.

1.2 How to Use Manual

A. Manual Use When Performing Scheduled Maintenance.

(1) Perform inspections and services listed in Scheduled Maintenance Chart (Refer to para 3.1).

(2) If a component is discovered to be faulty or out of adjustment, replace or adjust component in accordance with maintenance / service instructions (Refer to para 4.1).

B. Manual Use When Unit Is Malfunctioning And Cause Is Unknown.

(1) Perform an operational test on unit (Refer to para 2.1).

(2) Perform troubleshooting procedures listed in Troubleshooting Guide (Refer to para 2.2).

(3) If a component is discovered to be faulty or out of adjustment, replace or adjust component in accordance with maintenance / service instructions (Refer to para 4.1).

C. Manual Use When Damaged Component Is Known.

(1) Replace or adjust component in accordance with maintenance / service instructions (Refer to para 4.1).

1.3 Description Of 411 (75L) Power Examination Table

A. General Description (See Figure 1-1).

The 411(75L) Power Examination Table is a general purpose examination table designed specifically for performing general medical examinations and procedures. The table is available with or without programming. The programmable versions have additional features such as programmed positioning, a Home function, a Pan Out warning lamp, and audible warning signals.

Listed below are the different models available:

411-011 & -016	115 VAC without programming
411-012, -017 & -018	115 VAC with programming
411-013	230 VAC without programming
411-014	230 VAC with programming

The major serviceable components of the table are: the headlock limit switch (early units only), back actuator limit switch (early units only), pan safety limit switch, base down limit switch, base up limit switch, tilt actuator, tilt capacitor, back actuator, back capacitor, foot actuator, foot capacitor, base actuator, base capacitor, PC control board, foot inlet PC board, hand inlet PC board, stirrup assembly, headlock assembly, chain assembly, column assembly, duplex receptacle (115 VAC units only), basic non-programmable hand control (early units) which includes a switch panel, compact non-programmable hand control (later units) which includes a switch panel and a hand control PC board ***or*** a programmable hand control which includes a hand control switch panel and a hand control PC board, non-programmable foot control which includes foot switches and a foot control interface board ***or*** a programmable foot control which includes foot switches, a foot control interface board, indicator L.E.D.'s, and program control footswitches. *The following components apply to programmable units only:* tilt position sensor, back position sensor, foot position sensor, base reducer assembly which includes base position sensor. *The following components apply to 230 VAC units only:* AC receptacle, fuse holder (2).

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SECTION I
GENERAL INFORMATION

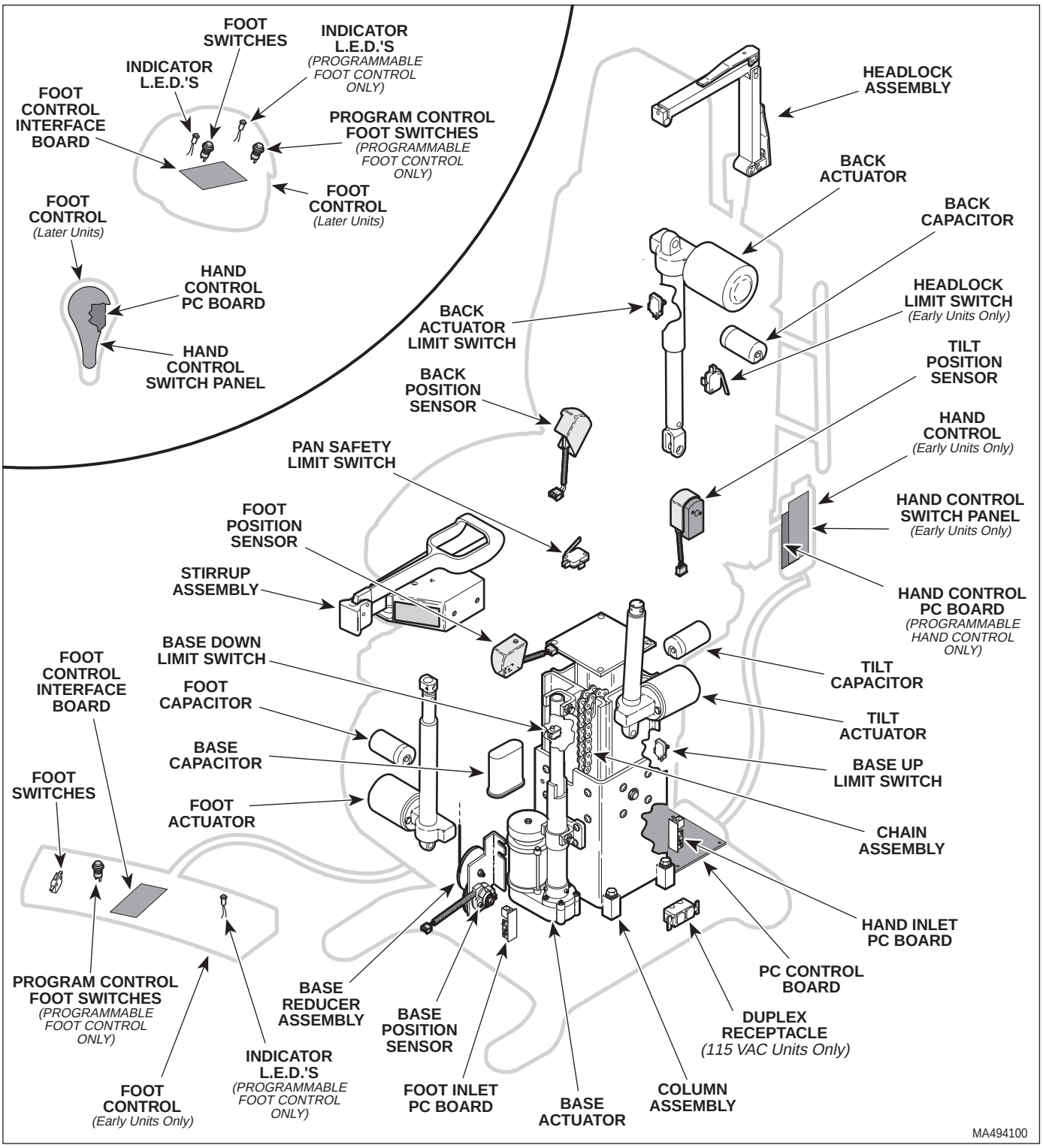

Figure 1-1. Major Components

B. Standard Operation Theory of Operation (See Figures 5-1 thru 5-9 for wiring diagram / electrical schematic)

Electrical power:

Line voltage is supplied directly to the table's PC control board. There is a transformer and associated follow-on circuitry on the PC control board which reduces the line voltage to 12 VDC. The 12 VDC provides power to operate the circuitry on the PC control board, foot control, and hand control.

Voltage is continuously supplied to the L.H. and R.H. electrical receptacles of 115 VAC units; 230 VAC units do not have receptacles.

Manual Operation of Tilt, Back, and Foot Actuator Assemblies:

When a function is selected using the hand control, the hand control sends a signal to the PC control board. The signal causes the appropriate relay on the PC control board to energize (i.e., if the TILT UP button is depressed on hand control, the Tilt Up relay on PC control board is energized). Line voltage is continuously supplied to all relays on PC control board. So, when a relay is energized, the line voltage flows thru the relay and is applied across the windings of the actuator motor, causing it to run. When the hand control button is released, the relay de-energizes, removing the line voltage from the windings of the actuator motor and causing it to stop running.

The Tilt, Back, and Foot actuators are ball screw driven. The actuator assemblies contain a pivot point on the end of the ball screw. If an actuator assembly is run to the end of its stroke, the ball screw shaft spins inside the nut, which allows the actuator assembly to run without damaging or advancing the nut.

The Tilt, Back, and Foot actuators have internal braking mechanisms which use friction to hold the actuator in place. When the actuator is run, the actuator overcomes the force of the friction, allowing it to move. When actuator is stopped, friction stops and holds actuator in place.

Manual Operation Of Base Actuator Assembly:

When a BASE UP or BASE DOWN function is selected using the hand control, the hand control sends a signal to the PC control board. The signal causes the base up or down relay, and the base brake relay on the PC control board to energize (i.e., if BASE UP button is depressed on hand control, Base Up relay and the base brake relay on PC control board energizes). Line voltage is continuously supplied to the relays on PC control board. So, when the base up or down relay is energized, the line voltage flows thru the relay and is applied across the windings of the actuator motor, causing it to run. At the same time, line voltage flows thru the brake relay and is applied across the solenoid coil of the base brake, causing the brake to disengage. When the hand control button is released, the relays de-energize, removing line voltage from the coils of the actuator motor, causing it to stop and at the same time, removing line voltage from the solenoid coil of the base actuator brake, causing the base brake to engage.

The base actuator is different from the other three actuators; it doesn't freewheel at the end of its stroke limit. This is because the base actuator operates under heavier loads. To prevent the base actuator from reaching its stroke limits, which could damage the actuator, two limit switches are used; a base down limit switch and a base up limit switch. These limit switches are normally closed (N.C.) switches. When the base actuator reaches the end of the travel (up or down), the appropriate N.C. switch is tripped, opening the switch circuit. The PC control board detects that the switch circuit has been opened and de-energizes the motor relay and base brake relay, causing the base actuator motor to stop running and the base brake to engage.

Headlock Crash Protection Circuit:

NOTE
The Headlock Crash Protection Circuit section applies to early units only. Later units do not have headlock limit switch or back actuator limit switch.

To prevent the headlock assembly from accidentally being run into an object such as a chair, foot, or floor, two limit switches are used. The headlock limit switch, located inside the back weldment, is a normally open (N.O.) switch. However, when the headlock assembly is in its normal position, the limit switch is tripped, creating a closed circuit. The PC control board detects that the circuit is closed and allows all functions to operate normally. If the headlock assembly contacts an object, the mounting bracket of the headlock assembly deflects away from the back assembly; this allows the headlock limit switch to untrip. This creates an open circuit which is detected by the PC control board. The PC control board will not allow the TABLE DOWN, BACK DOWN, and TILT UP functions to run while the headlock limit

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switch circuit is open (switch is untripped).

There is another limit switch called the back actuator limit switch. This limit switch is a N.C. switch which is connected in parallel with the headlock limit switch. If the back actuator limit switch is not tripped, a closed circuit exists which overrides the functionality of the headlock limit switch by bypassing it (allows all functions to run normally even if the headlock limit switch is untripped - an untripped condition exists when headlock mounting bracket is deflected away from back assembly). The back actuator limit switch is tripped when back section is between 0° to 30° above horizontal (in relation to seat section) and untripped when the back section reaches +30°. Above +30°, the headlock assembly cannot contact the floor and is not needed. Therefore, the back actuator limit switch provides a way of bypassing the headlock limit switch and preventing it from becoming a nuisance (when back section is in full up position, headlock assembly can fall forward due to gravity, which will prevent TABLE DOWN, BACK DOWN, and TILT UP functions from running - a nuisance). Above +30° above horizontal (in relation to seat section), the N.C. back actuator limit switch is untripped creating an closed circuit - at this point the headlock limit switch is bypassed. At +30° or below horizontal (in relation to seat section), the N.C. back actuator limit switch is tripped creating an open circuit - at this point the headlock limit switch is not being bypassed.

Pan Safety Limit Switch:

The table has a N.O. pan safety limit switch which is monitored by the PC control board. When pan assembly is in stowed position, the switch is tripped resulting in a closed circuit. If the pan assembly is not pushed into its fully stowed position, the pan safety limit switch will not be tripped and there will be an open circuit. If the PC control board detects an open circuit, the foot up relay is disabled, preventing movement of the FOOT UP function. This safety feature prevents the table operator from accidentally colliding the foot section into the treatment pan assembly.

General Information:

All actuator motors have a thermal overload switch which will activate if the actuator assembly is run continuously and overheats. The actuator motor is not designed for continuous operation. The normal cool off period for the thermal overload switches is 10 - 20 minutes.

Each actuator motor has a capacitor which provides start up power and motor run power.

There are two 1/10 amp slow blow fuses (early units use one 1/10 amp slow blow fuse) providing over-current protection to the input of the PC control board on the non-progrommable table and two 0.15 amp slow blow fuses providing over-current protection to the input of the PC control board on the programmable table.

There is a 5 amp slow blow fuse to provide over-current protection for each function's relays (i.e, Tilt fuse protects TILT UP and TILT DOWN relays).

C. Programmable Software Theory of Operation (See Figures 5-1 thru 5-3 for wiring diagram / electrical schematic) (Applies only to tables with programed positioning)

Operation Of Programmable Software:

The previous paragraphs have outlined the theory of operation for manual functions on both the programmable and non-programmable tables. The following paragraphs will describe software functions on the programmable tables.

When the table is powered up, the software initializes the PC control board and then checks for inputs. There are two inputs which can be initiated by the operator using the hand control; an input to initiate the “Calibration” function and an input to initiate the “Clear Diagnostics Codes” function. Also, the PC control board checks if error codes are stored in memory to determine if the “error” mode should be initiated.

Additionally, there are two technician inputs that may be initiated by depressing switches mounted on the PC control board; an input to initiate the “Clear Calibration Data” function and an input to initiate the “Clear Memory” function.

The “Calibration” function may be initiated by the technician if a new PC control board or position sensor is installed, the position sensor is adjusted, the table is not moving to a programmed position properly, or the table begins acting erratically. When the calibration mode is initiated, the PC control board runs all actuators to their up and down limits and measures the voltage output of the position sensors at the limits. These voltage values are stored in the PC control board’s memory and used as the basis for storing programmed positions into memory. Also, the error codes for incorrect direction and no sensor output change are cleared from the PC control board’s memory. If the calibration procedure is

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not successful due to a position sensor reading being out of limits, the error code indicating why will be stored into the PC control board's memory along with an error code indicating the table is not calibrated. The PC control board emits a 1 second warning beep at 1.5 second intervals to indicate to the operator that the calibration procedure is taking place. The calibration procedure is described in Section IV, Maintenance.

The "Clear Diagnostics Codes" function may be initiated by the operator to reset the PC Control Board, after the PC control board initiates the error code mode due to a voltage spike or loose position sensor connection. The PC control board displays the error code by alternately flashing the PROGRAM lamp and the PAN OUT lamp to form a code (See Diagnostic code [error code] operation later in this paragraph). When the table is in the error code mode, only manual positioning of the table will work. To resume normal operation, the "Clear Diagnostic Codes" procedure must be completed. If the PC control board is replaced or the position sensor is replaced or adjusted, this procedure will not work; in this case, the "clear memory" procedure followed by the Calibration procedure must be performed. The procedure is described in Section IV, Maintenance.

The "Clear Calibration Data" function is initiated when it is desired to clear the PC control board's memory where the calibration data is stored. The "Clear Calibration Data" procedure is described in Section IV, Maintenance.

The "Clear Memory" function is initiated when it is desired to clear the PC control board's memory where the error codes and program position data are stored. This function should be used if the PC control board seems locked up or if a position sensor is replaced / adjusted. The "Clear Memory" procedure is described in Section IV, Maintenance.

Operation of Home Position Function:

When the operator presses the Home position button, the PC control board lowers the base actuator until the base down limit switch is tripped. The Home position button can be pressed and released; it does not have to be held down to continue movement. If the base down limit switch is not detected as being tripped (open circuit) within 18 seconds from the time the Home position button was pressed, the PC control board de-energizes the base actuator. If the headlock limit switch is detected as untripped, resulting in an open circuit, the PC control board stops the base actuator, terminates the Home position function, and sounds a beep every two seconds. If Base Up function is selected, the base actuator is stopped and the Home position function is terminated.

Stop Function Operation:

When a Stop button has been pressed, the PC control board terminates all functions, stopping table movement. When the Stop button is released, the stop mode is cancelled and normal table operation may resume.

Program Mode Operation:

The Program Mode is used to allow the operator to program up to four different table top positions into memory. When the Program Mode button is pressed, the Program Mode function stays active for five seconds, until the operator has pressed one of the four Programmed Position buttons, or the Stop button is pressed. Also, the Program Mode lamp is illuminated and stays illuminated until the 5 seconds are up or an action is taken. When a Programmed Position button is pressed, the PC control board stores the position sensor voltage values for each axis into its memory. Then, if the position was stored correctly, the PC control board flashes the Program Mode lamp three times.

Programmed Position Operation:

To recall a program that is stored in memory, the operator selects one of the four Programmed Position buttons. The button must be pressed and held to continue table movement. The PC control board determines which direction to run the actuators by comparing the current position sensor voltage output for each axis with the voltage values stored in memory for each axis. The PC control board energizes the relays for the actuators requiring movement and then monitors the position sensor voltage output for each axis. When the position sensor voltage output of each position sensor matches the value stored in the PC control board's memory, the PC control board de-energizes the actuator relays.

The PC control board has a maximum run time it allows for each actuator at any one time. This feature prevents damage to an actuator motor because of an actuator relay sticking. When a button is pressed, the PC control board starts a countdown of the maximum time allowed for that actuator. At the end of the countdown, if the button is still sensed by the PC control board as being pressed, the PC control board de-energizes the relay for the actuator. The maximum run time for each function is:

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- Base Up / Base Down - 18 seconds
- Back Up / Back Down - 18 seconds
- Foot Up / Foot Down - 18 seconds
- Tilt Up / Tilt Down - 18 seconds

During the Program Position, the PC control board monitors for several errors:
If it is detected that a position sensor's voltage is increasing when it should be decreasing, decreasing when it should be increasing, or data input from a position sensor is invalid, the PC control board stops the table and sets an error code condition. An explanation of the error codes is given in para 5.2.
If data stored for the Program Position button being pressed is invalid, the Program lamp will flash on and off until the button is released.
If the base down limit switch or base up limit switch is tripped (open circuit), the PC control board disables the Program Positioning mode.
If the pan safety limit switch is untripped (open circuit), the PC control board disables the Program Positioning mode.
If the headlock limit switch (early units only) is untripped (open circuit), the PC control board disables the Program Positioning mode and sounds 1 beep every two seconds (for as long as the headlock is deflected).
If the Stop button is pressed, the Program Position mode is disabled.

Manual Positioning Software Operation:

During manual positioning operation, the software for the programmable table works like the software for the non-programmable table except for some additional controls:
If there is invalid data inputs from any position sensor, the PC control board still allows manual positioning operation.
If the N.O. pan safety limit switch is untripped (treatment pan is pulled out) (open circuit), the PC control board disables the Foot Up function and illuminates the Pan Out lamp.
If conflicting functions are attempted such as Base UP and Base Down, the PC control board disables all functions until all buttons are released. Then, the PC control board resets and normal operation may be continued.

Diagnostic Code (Error Code) Operation:

When the PC control board detects an error condition, it disables the Home position and Programmed Position functions. When these buttons are pressed, nothing happens at all. By unplugging the table power cord and then plugging it back in, the PC control board enters the "diagnostic code" mode, described as follows: At power up, if an error code is stored in memory, the PC control board outputs the error code to the hand control in the form of a code. The Program Mode lamp flashes on and then off for the number of times equal to the first digit of the error code stored in memory. Then the Pan Out lamp flashes on and then off for the number of times equal to the second digit of the error code stored into memory. The PC control board then waits one second, repeats the error code a second time, then waits one second and repeats the error code a third time. The next error code is also displayed three times consecutively. This is repeated until all error codes have been displayed. Then, the PC control board continuously displays the error codes on the hand control or foot control.

Position Sensor Operation:

There is a position sensor mounted to a pivot point on the Back, Tilt, and Foot axis and a position sensor mechanism (called a base reducer assembly) attached to the column assembly for the base function. As each axis rotates / moves, its position sensor's inner wheel rotates with the axis. The position sensor is basically a variable resistor which changes resistance in a linear manner when rotated. So when the axis rotates / moves, the position sensors voltage output changes, due to its resistance change, in a linear fashion based upon how far the axis has moved. The PC control board monitors the voltage change to determine the location of an axis. When a programmed position is programmed by the operator, the PC control board stores the voltage output value of each axis into its memory. When the operator wishes to return to that stored position later, the programmed position button for the desired programmed position is depressed. The PC control board determines the current position of all the axis' based on the voltage output of the position sensors for all axis, and then determines which axis' must be moved and in what direction. The PC control board energizes the relays for these actuators and the table top is moved to the desired programmed position. The PC control board stops these actuators when the voltage value of the position sensors matches the values stored in the PC control board's memory.

1.4 Standard Torque Specifications

The following torque specifications in Table 1-1 apply to the various hardware used on the unit unless otherwise listed elsewhere in the service procedures or parts illustrations:

SECTION I
GENERAL INFORMATION

Table 1-1. Torque Specifications

Hardware Size	Torque Values
#6	11 to 21 inch / lbs. (1.2 to 2.3 N•m)
#8	20 to 30 inch / lbs. (2.2 to 3.3 N•m)
#10	32 to 42 inch / lbs. (3.6 to 4.8 N•m)
1/4 inch	75 to 85 inch / lbs. (8.5 to 9.6 N•m)
5/16 inch	18 to 22 ft. / lbs. (24.4 to 29.8 N•m)
3/8 inch	31 to 35 ft. / lbs. (42.0 to 47.5 N•m)
1/2 inch	50 to 60 ft. / lbs. (67.8 to 81.4 N•m)

1.5 Specifications

Factual data for the 411(75L) Power Examination Table is provided in Table 1-2. Also, see Figure 1-2.

Table 1-2. Specifications

Description	Data
Weight:	
Without Shipping Carton	515 lbs (233.6 kg)
With Shipping Carton	550 lbs (249.5 kg)
Shipping Carton:	58 in. "L" x 42 in. "W" x 30 in. "H" (147.3 cm x 106.7 cm x 76.2 cm)
Maximum Patient Load:	325 lbs. (147.4 kgs)
Dimensions (See Figure 1-2):	
Table Top Length	69.25 in. (175.9 cm)
Table Top Length (headrest extended	82.75 in. (210.2 cm)
Table Top Width	27 in. (68.6 cm)
Overall Width	27 in. (68.6 cm)
Table Top Positioning:	
Table Top Height (Adjustable)	22 in. to 40 in. ±1.0 in. (55.9 cm to 101.6 cm)
Back Section	0° (horizontal) to +85°
Foot Section	0° (horizontal) to -90°
Table Top Tilt Range	0° (horizontal) to +30° (foot up)
Table Speeds (@ 60 Hz):	
Base Up	12 seconds ±1
Back Up	10 seconds ±1
Tilt Up	14 seconds ±1
Foot Up	12 seconds ±1
Paper Rolls	Can accept two standard paper rolls of 18 in. x 3.0 in. (45.7 cm x 7.6 cm)
Power Cord:	extends 70 in. (Minimum) (279.4 cm) from table. 12 AWG / 3 conductor, SJT grey jacketed junior hard service with hospital grade grounding type plug
Electrical Requirements:	
115 VAC Unit	110 - 126 VAC, 50/60 HZ 12 amp, single phase
230 VAC Unit	220 - 240 VAC, 50/60 HZ 8 amp, single phase
Recommended Circuit:	A separate (dedicated) circuit is recommended for this table. The table *should not* be connected to an electrical circuit with other appliances or equipment unless the circuit is rated for the additional load.
Certifications:	
115 VAC Unit	U.L. Listed Medical Equipment C.U.L. listed to C.S.A. Standard C22.2 #125 ISO-9001 Certified
230 VAC Unit	CE, ISO 9001 / EN46001 GOST

1.6 Parts Replacement Ordering

If a part replacement is required, order the part directly from the factory as follows:

(1) Refer to Figure 1-3 to determine the location of the model number and serial number of the unit and record this data.

(2) Refer to the Parts List to determine the item numbers of the parts, part numbers of the parts, descriptions of the parts, and quantities of parts needed and record this data (Refer to para 6.1).

NOTE
Ask the Purchasing Department of the company that owns the unit for this information. Otherwise, this information may be obtained from the dealer that sold the unit.

(3) Determine the installation date of the unit and record this data.

(4) Call Midmark with the recorded information and ask for the Medical Products Technical Services Department. See back cover of this manual for the phone number or use the Fax Order Form (See page 7-2 for Fax Order Form).

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SECTION I
GENERAL INFORMATION

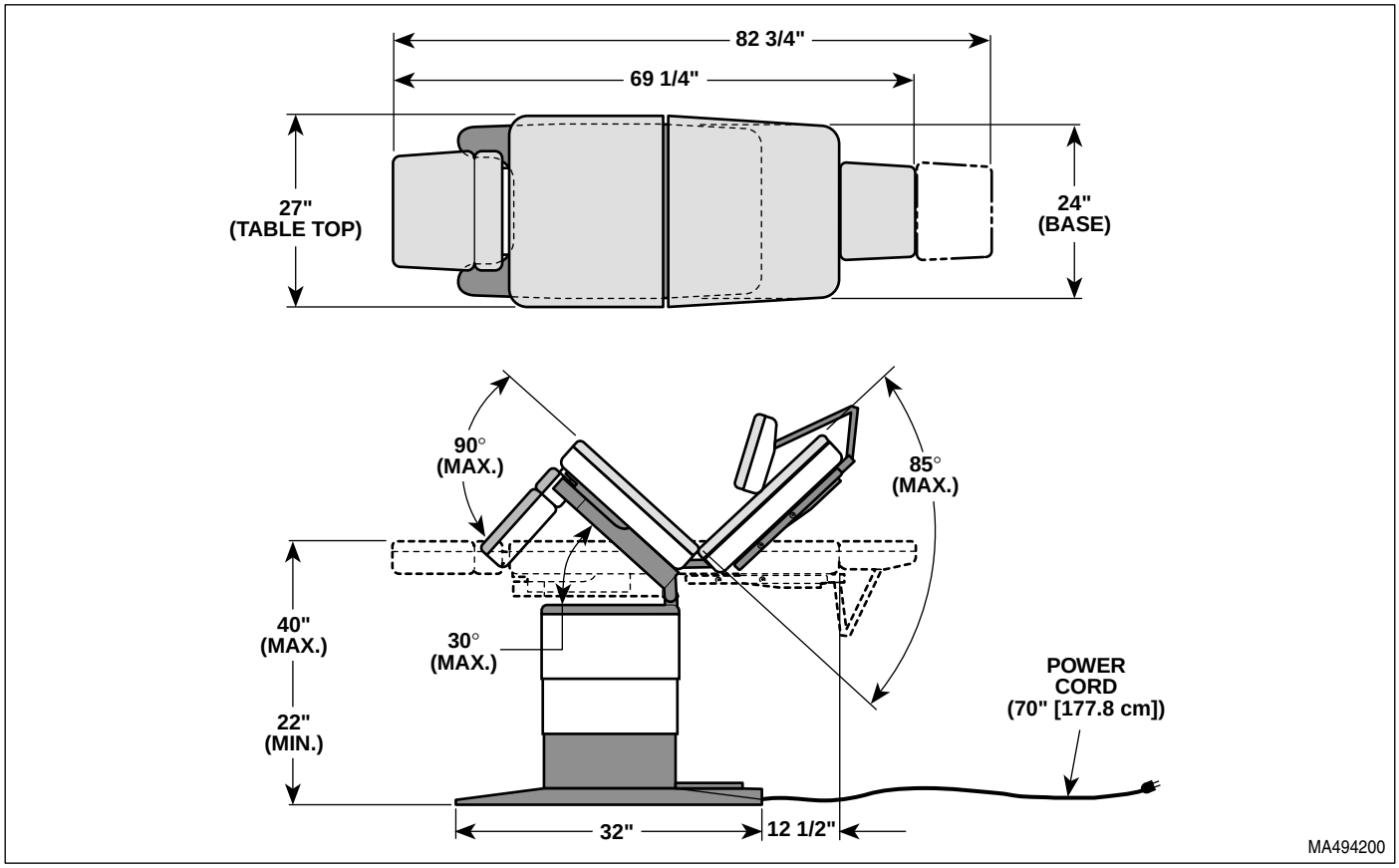

Figure 1-2. Table Dimensions

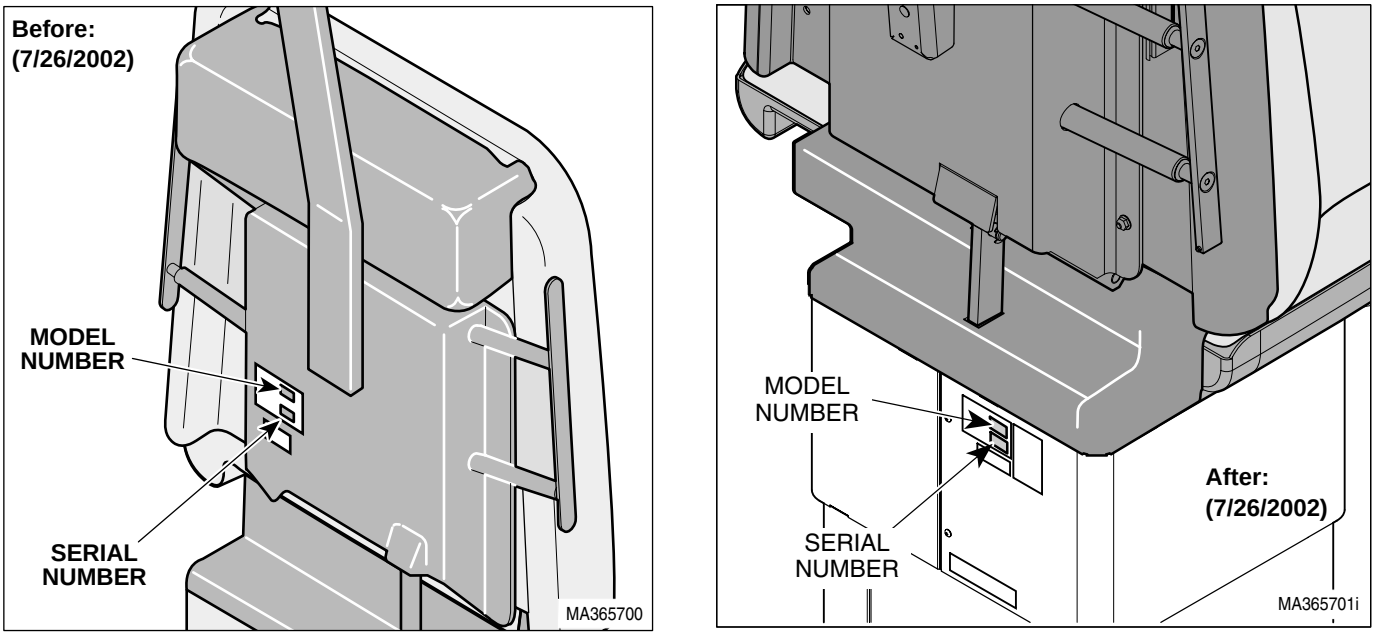

Figure 1-3. Model Number / Serial Number Location

1.7 Special Tools

Table 1-3 lists all of the special tools needed to repair the unit, how to obtain the special tools, and the purpose of each special tool.

Table 1-3. Special Tool List

Description of Special Tool	Manufacturer's Name / Address / Phone	Manufacturer's Part Number	Purpose of Special Tool
Multimeter (with testing hooks)	Commercially Available	Any Type	Used to perform continuity and voltage checks.
Protractor	Commercially Available	Any Type	Used to check the angle of motion for all movable table top sections.
T15 Torx Wrench	Commercially Available	Any Type	Used to loosen / tighten the screws securing the position sensors, allowing adjustments to be made.
5/16 in. - 18 x 1-1/4 Bolt (Quantity of 2)	Midmark Corporation 60 Vista Drive Versailles, Ohio 45380 (937) 526-3662	505-702308	Used to remove tension from eccentric bearings so they may be adjusted.
Torque Wrench	Commercially Available	Any Type	Used to tighten nuts or screws to specified values.
Sensor Holder Tool (tool comes with a position sensor kit).	Midmark Corporation 60 Vista Drive Versailles, Ohio 45380 (937) 526-3662	046-0008-00	Used to hold the 5/16" hex drive while a position sensor is being installed.

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Return To Table Of Contents

SECTION I
GENERAL INFORMATION

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SECTION II
TESTING AND TROUBLESHOOTING

2.1 Operational Test (See Figure 2-1, Sheets 1 and 2)

In order to effectively diagnose a malfunction of the 411 (75L), it may be necessary to perform an operational test as follows:

WARNING
Refer to the Operator Manual for complete instructions on operating the table. Failure to do so could result in personal injury.

NOTE
The Operational Test, for the most part, only describes what should happen when the table is operated. If the table does something other than described, a problem has been discovered. Refer to the Troubleshooting Guide to determine the cause of the problem and its correction.

(1) Plug the table into a grounded, non-isolated, correctly polarized outlet, that has the proper voltage output for the table.

NOTE
Pan slide assembly should be pushed in fully for the following step:

(2) Depress TABLE UP, TABLE DOWN, BACK UP, BACK DOWN, TILT UP, TILT DOWN, FOOT UP, and FOOT DOWN buttons on hand control.

Observe. The table top should move in the direction corresponding to the button which is being depressed. No section of the table top should drift on its own after the hand control button is released. No actuator assembly should make excessive squealing noises. Movement should be steady and should match the speeds and range of motions listed below:

Table Speeds (@ 60 Hz):
- Base down to Base up ..... 12 ± 1 seconds
- Back down to Back up ..... 10 ± 1 seconds
- Tilt down to Tilt up ..... 14 ± 1 seconds
- Foot down to Foot up ..... 12 ± 1 seconds

Range of Motion:
- Base down to Base up ..... 22.0 to 40.0 in. ±1.0 in. (55.9 to 101.6 cm)
- Back down to Back up ..... 0° to +85°
- Tilt down to Tilt up ..... 0° to +30°
- Foot down to Foot up ..... -90° to 0°

(3) Lower the FOOT DOWN function all the way down. Pull the pan slide assembly outward until pan safety switch is no longer tripped. Press FOOT UP button on hand control.

Observe. The foot section of table top should not move when FOOT UP button is pressed. Also, on a programmable table hand control, the PAN OUT lamp should flash until the FOOT UP button is released.\

(4) Push pan slide assembly inward until it is in stowed position. Press FOOT UP button on hand control.

Observe. The foot section of table top should move when FOOT UP button is depressed.

(5) Raise BACK UP function all the way up.

NOTE
Steps 6 thru 8 apply to early units only. Later units do not have headlock limit switch.

(6) Push on headrest assembly (toward foot end of table) until mounting bracket is deflected away from back section. Then, press TABLE DOWN, BACK DOWN, and TILT UP buttons.

Observe. The three functions should operate normally while the headrest assembly is being pushed on.

NOTE
When the back section is between 0° and +30° and then the headrest is deflected, the TABLE DOWN, BACK DOWN, and TILT UP functions should be disabled.

(7) Lower BACK DOWN function all the way.

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SECTION II
TESTING AND TROUBLESHOOTING

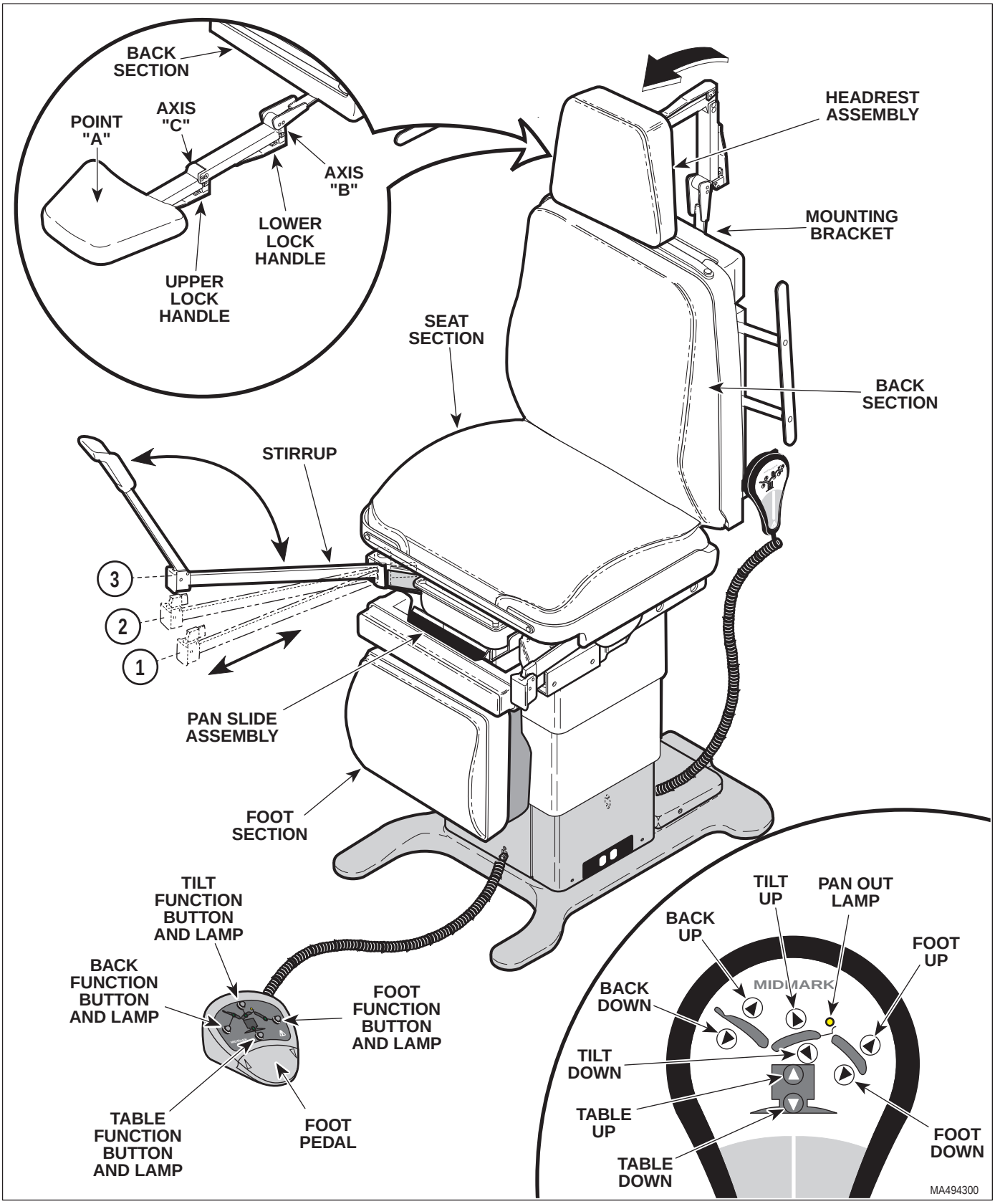

Figure 2-1 (Sheet 1 of 2). Non-Programmable Table Operational Test

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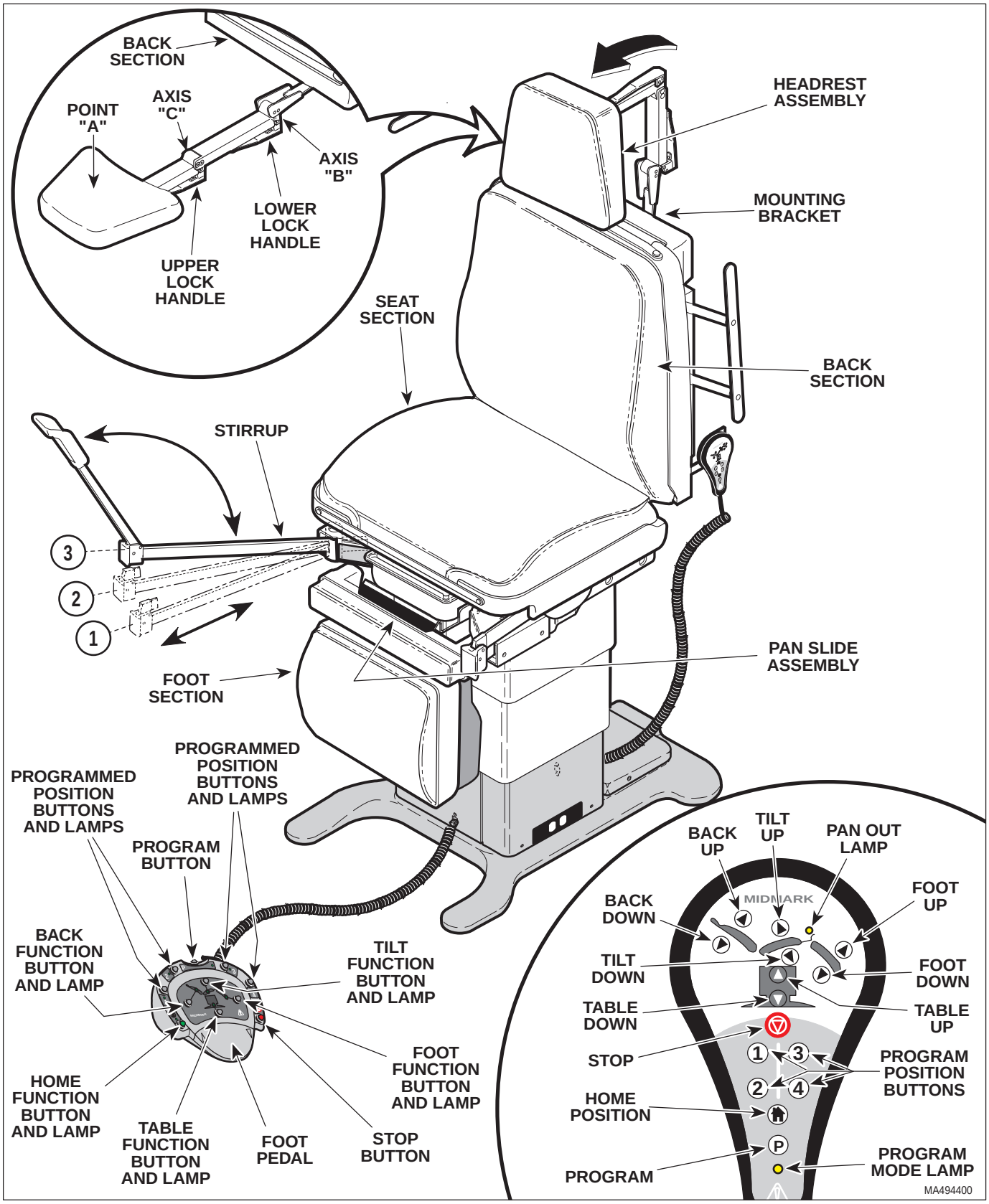

Figure 2-1 (Sheet 2 of 2). Programmable Table Operational Test

(8) Push on headrest assembly until mounting bracket is deflected away from back section. Then, press TABLE DOWN, BACK DOWN, and TILT UP buttons.

Observe. None of the three functions should operate while the headrest assembly is being pushed on. Also, on programmable tables, the PC control board should sound a warning beep every two seconds as long as the headrest remains deflected.

(9) Place approximately 325 lbs. (147.4 kg) of weight on the seat section of the table top.

(10) Raise TABLE UP function all the way up.

Observe. The base actuator should not squeal or make excessive noise when lifting the weight. The base actuator should be able to lift the weight. The base actuator should not hum or make any other type of noise when the table top reaches maximum height. The base up limit switch should trip, stopping the base actuator from running.

(11) Lower TABLE DOWN function all the way down.

Observe. The base actuator should not squeal or make excessive noise when lowering the weight. The actuator assembly should not hum or make any other type of noise when the table top reaches its minimum height. The base down limit switch should trip, stopping the base actuator from running.

(12) Remove weight from seat section of table top.

(13) If the table has an optional foot control, repeat step 2 using the foot control.

(14) Unlock upper lock handle and lower lock handle, position headrest in a horizontal position as shown, and then relock upper lock handle and lower lock handle.

(15) Place a 45 lb. (20.4 kg) static load at Point A.

Observe. There should be no movement at Axis B or Axis C when the static load is applied to the headrest. The maximum force required to unclamp a locking handle should be 17 lbs. (7.7 kg) and the maximum force required to clamp a locking handle should be 35 lbs. (15.8 kg).

(16) Extend the stirrups; then lift up on end of stirrups and move them laterally from the left to the right. Let the stirrups lock into each of the three positions. While applying downward pressure, attempt to move a stirrup laterally to the left or right.

Observe. The stirrups should be able to be extended and moved laterally easily. The stirrups should lock into each of the three positions and should not be able to be moved laterally as long as downward pressure is applied on the stirrup.

NOTE
The remaining steps apply to programmable units only.

(17) Raise the TABLE UP function all the way up.

(18) Press the HOME POSITION button for one second and then release it. After the table top lowers halfway, press the STOP button.

Observe. When the HOME POSITION button is pressed, the table top should begin to lower. When the STOP button is pressed, the table top should stop lowering.

(19) Press the HOME POSITION button and allow the table top to lower completely.

Observe. When the table top is completely lowered, the base actuator should stop running automatically, indicating that the base down limit switch is tripped.

(20) If the table has an optional foot control, repeat steps 17 thru 19 using the foot control.

NOTE
After the PROGRAM button is pressed, the operator has approximately 5 seconds to press one of the four Program Position buttons. At the end of the 5 seconds, the PROGRAM MODE lamp turns off, indicating that the program mode has ended.

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(21) Press the PROGRAM button and then within 5 seconds, press the Program Position “1” button.

Observe. When the PROGRAM button is pressed, the PROGRAM MODE lamp will illuminate. Then, when the Program Position “1” button is pressed, the PROGRAM MODE lamp will go off and then flash three times to indicate that the table position data was successfully stored into the PC control board’s memory.

(22) Use any of the hand control buttons to move the table top to a new position.

(23) Press and hold the Program Position “1” button until the table stops moving.

Observe. The table top should move back to the position programmed in step 21.

(24) Repeat steps 21 thru 23 three more times using Program Position buttons “2”, “3” and then “4”.

(25) If the table has an optional foot control, repeat steps 21 thru 24 using the foot control.

2.2 Troubleshooting Procedures

Table 2-1 is a Troubleshooting Guide which is used to determine the cause of the malfunction.

Table 2-1. Troubleshooting Guide

Problem	Symptom	Probable Cause	Check	Correction
Table will not operate when any of the functions on the hand control or foot control are selected.	When a hand control button is pressed, nothing happens.	Power cord is not plugged into facility wall outlet.	Check to see if power cord is plugged in.	Plug power cord into facility wall outlet.
		Facility circuit breaker providing power to unit is tripped.	Check to see if facility circuit breaker for unit is tripped. One way of checking this is to plug a lamp into wall outlet that table was plugged into.	If facility circuit breaker is tripped, determine what caused the circuit breaker to trip, correct the problem, and then reset / replace the circuit breaker.
		Wire connections loose.	Check all wiring connections from power cord to terminal block. Perform continuity check on wires. Use multimeter to check for proper voltage levels. See Figure 5-1.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Applies to Non Programmable units only. 1/10 amp primary fuse(s) on PC control board is blown.	Refer to Figure 2-2 for this check. Perform continuity check on fuses.	Refer to Figure 2-2 and replace blown fuse(s).
		Applies to Programmable units only. 0.15 amp primary fuse(s) on PC control board is blown.	Refer to Figure 2-2 for this check. Perform continuity check on fuses.	Refer to Figure 2-2 and replace blown fuse(s).
		PC control board is malfunctioning.	Replace suspect PC control board with known working PC control board.	Replace PC control board. Refer to para 4.3 or 4.4.
		Applies to 230 VAC units only. Line input fuse(s) is blown.	Perform continuity check on fuses.	Replace fuse(s). Refer to para 4.44.
		Applies to 230 VAC units only. Fuse holder malfunctioning.	Perform continuity check on fuse holder.	Replace fuse holder. Refer to para 4.46.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
Table will not operate when any of the functions on the hand control or foot control are selected. - Continued	When a hand control button is pressed, nothing happens. - Continued	***Applies to 230 VAC units only.*** AC receptacle malfunctioning.	Perform continuity check on AC inlet.	Replace AC receptacle. Refer to para 4.45.
		Applies to 230 VAC programmable units only. Choke assembly inlet harness malfunctioning.	Perform continutity check on choke assembly inlet harness.	Replace choke assembly inlet harness. Refer to para 4.47.
No actions can be initiated from hand control.	Table has power, but no functions can be initiated from hand control. Foot control works properly.	Coil cord is not plugged into hand control or receptacle on table properly.	Check if coil cord is plugged in properly.	Plug coil cord into hand control or receptacle on table. Clean any dirty connections.
		Hand control switch panel is malfunctioning.	Replace suspect hand control switch panel with known working hand control switch panel.	Replace hand control switch panel. Refer to para 4.23, 4.24, or 4.26.
		Hand control PC board is malfunctioning.	Replace suspect hand control PC board with known working hand control PC board.	Replace hand control PC board. Refer to para 4.25 or 4.26.
		Hand inlet PC board is malfunctioning.	Replace suspect hand inlet PC board with known working hand inlet PC board.	Replace hand inlet PC board. Refer to para 4.22.
		Cord running from hand inlet PC board to PC control board is disconnected or broken.	Check cord to see if it is properly connected. Replace suspect cord with known working cord or perform continuity check on cord.	Replace cord.
		PC control board is malfunctioning.	Replace suspect PC control board with known working PC control board.	Replace PC control board. Refer to para 4.3 or 4.4.
One or more functions cannot be initiated from hand control.	Some functions may be initiated with hand control, but at least one may not.	Hand control switch panel is malfunctioning (switch membrane is malfunctioning).	Replace suspect hand control switch panel with known working hand control switch panel.	Replace hand control switch panel. Refer to para 4.23, 4.24, or 4.26.
		Hand control PC board is malfunctioning.	Replace suspect hand control PC board with known working hand control PC board.	Replace hand control PC board. Refer to para 4.25 or 4.26.
		Fuse for non-operating (suspect) function is blown.	Refer to Figure 2-2 for this check. Perform continuity check on suspect fuse.	Refer to Figure 2-2 for fuse location. Replace blown fuse.
		Relay for non-operating (suspect) function is malfunctioning.	Refer to Figure 2-2 for this check. When hand control button is pressed, observe relay L.E.D's on PC control board. The L.E.D. for the function which was selected should illuminate to indicate that its relay is operating correctly.	If relay L.E.D. does not illuminate properly, replace PC control board. Refer to para 4.3 or 4.4.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
No actions can be initiated from foot control.	Table has power, but no functions can be initiated from foot control. Hand control works properly.	Coil cord is not plugged into foot control or receptacle on table properly.	Check if coil cord is plugged in properly.	Plug coil cord into foot control or receptacle on table. Clean any dirty connections.
		Foot control interface board is malfunctioning.	Replace suspect foot control interface board with known working foot control interface board.	Replace foot controlPC board. Refer to para 4.27 or 4.30.
		Foot inlet PC board is malfunctioning.	Replace suspect foot inlet PC board with known	Replace foot inlet PC board. Refer to para 4.22.
		Cord running from foot inlet PC board to PC control board is disconnected or broken.	Check cord to see if it is properly connected. Replace suspect cord with known working cord or perform continuity check on cord.	Replace cord.
		PC control board is malfunctioning.	Replace suspect PC control board with known working PC control board.	Replace PC control board. Refer to para 4.3 or 4.4.
	Some functions may be initiated with foot control, but at least one may not.	A footswitch for a function is malfunctioning.	Perform a continuity check on footswitch.	Replace footswitch. Refer to para 4.31, 4.32, 4.33, or 4.34.
		Foot control interface board is malfunctioning.	Replace suspect foot control interface board with known working foot control interface board.	Replace foot controlPC board. Refer to para 4.27 or 4.30.
		Fuse for non-operating (suspect) function is blown.	Refer to Figure 2-2 for this check. Perform continuity check on suspect fuse.	Refer to Figure 2-2 for fuse location. Replace blown fuse.
		Relay for non-operating (suspect) function is malfunctioning.	Refer to Figure 2-2 for this check. When a footswitch is depressed, observe relay L.E.D's on PC control board. The L.E.D. representing the function which was selected should illuminate to indicate its relay is operating correctly.	If relay L.E.D. does not illuminate properly, replace PC control board. Refer to para 4.3 or 4.4.
BACK UP and BACK DOWN functions do not work. All other functions work.	When BACK UP and BACK DOWN buttons are pressed, table will not move (all other functions work).	Back capacitor is weak or blown.	Replace suspect back capacitor with known working back capacitor.	Replace back capacitor. Refer to para 4.8.
		Thermal overload switch in back actuator motor is activated.	–	Wait 10 to 20 minutes to allow back actuator motor to cool.
		5 amp BACK fuse for BACK UP and BACK DOWN functions is blown.	Refer to Figure 2-2 for this check. Perform a continuity check on 5 amp BACK fuse.	Replace blown fuse. See Figure 2-2 for fuse location.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
BACK UP and BACK DOWN functions do not work. All other functions work. -Continued	When BACK UP and BACK DOWN buttons are pressed, table will not move (all other functions work). -Continued	Wire connections loose.	Check all wiring connections to back actuator assembly.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Back actuator assembly is malfunctioning.	Replace suspect back actuator assembly with known working back actuator assembly.	Replace actuator motor or back actuator assembly. Refer to para 4.16 or 4.7.
		PC control board is malfunctioning.	Refer to Figure 2-2 for this check. Press BACK UP and then BACK DOWN button while observing the PC control board. The BACK UP L.E.D. should illuminate when the BACK UP button is pressed and the BACK DOWN L.E.D. should illuminate when the BACK DOWN button If, not, the PC control board is malfunctioning.	Replace PC control board. Refer to para 4.3 or 4.4.
TILT UP and TILT DOWN functions do not work. All other functions work.	When TILT UP and TILT DOWN buttons are pressed, the table will not move (all other functions work).	Tilt capacitor is weak or blown.	Replace suspect tilt capacitor with known working tilt capacitor.	Replace tilt capacitor. Refer to para 4.6.
		Thermal overload switch in tilt actuator is activated.	–	Wait 10 to 20 minutes to allow tilt actuator motor to cool.
		5 amp TILT fuse for TILT UP and TILT DOWN functions is blown.	Refer to Figure 2-2 for this check. Perform continuity check on 5 amp TILT fuse.	Replace blown fuse.
		Wire connections loose.	Check all wiring connections to tilt actuator assembly.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Tilt actuator assembly is malfunctioning.	Replace suspect tilt actuator assembly with known working tilt actuator assembly.	Replace actuator motor or tilt actuator assembly. Refer to para 4.16 or 4.5.
TILT UP and TILT DOWN functions do not work. All other functions work.	When TILT UP and TILT DOWN buttons are pressed, the table will not move (all other functions work).	PC control board is malfunctioning.	Refer to Figure 2-2 for this check. Press TILT UP and then TILT DOWN button while observing the PC control board. The TILT UP L.E.D. should illuminate when the TILT UP button is pressed and the TILT DOWN L.E.D. should illuminate when the TILT DOWN button is pressed. If not, the PC control board is malfunctioning.	Replace PC control board. Refer to para 4.3 or 4.4.

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
TABLE UP and TABLE DOWN functions do not work. All other functions work.	When TABLE UP and TABLE DOWN buttons are pressed, the table will not move (all other functions work).	Base capacitor is weak or blown.	Replace suspect base capacitor with known working base capacitor.	Replace base capacitor. Refer to para 4.14.
		Thermal overload switch in base actuator motor is activated.	–	Wait 10 to 20 minutes to allow base actuator to cool.
		5 amp BRAKE/ BASE fuse for TABLE UP, TABLE DOWN, and base brake functions is blown.	Refer to Figure 2-2 for this check. Perform continuity check on 5 amp BRAKE/BASE fuse.	Replace blown fuse. See Figure 2-2 for fuse location.
		Wire connections loose.	Check all wiring connections to base actuator assembly and base brake solenoid.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Base actuator assembly is malfunctioning.	Replace suspect base actuator assembly with known working base actuator assembly.	Replace base actuator assembly. Refer to para 4.13.
		PC control board is malfunctioning.	Refer to Figure 2-2 for this check. Press TABLE UP and then TABLE DOWN button while observing the PC control board. The TABLE UP L.E.D. and BRAKE/BASE L.E.D. should illuminate when the TABLE UP button is pressed and the TABLE DOWN L.E.D. and the BRAKE/BASE L.E.D. should illuminate when the TABLE DOWN button is pressed. If not, the PC control board is malfunctioning.	Replace PC control board. Refer to para 4.3 or 4.4.
		Brake on base actuator is malfunctioning.	–	Replace base actuator. Refer to para 4.13.
FOOT UP and FOOT DOWN functions do not work. All other functions work.	When FOOT UP and FOOT DOWN buttons are pressed, the table will not move (all other functions work).	Foot capacitor is weak or blown.	Replace suspect foot capacitor with known working foot capacitor.	Replace foot capacitor. Refer to para 4.12.
		Thermal overload switch in foot actuator is activated.	–	Wait 10 to 20 minutes to allow foot actuator motor to cool.
		5 amp FOOT fuse for FOOT UP and FOOT DOWN functions is blown.	Refer to Figure 2-2 for this check. Perform continuity check on 5 amp FOOT fuse.	Replace blown fuse. See Figure 2-2 for fuse location.
		Wire connections loose.	Check all wiring connections to foot actuator assembly.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
FOOT UP and FOOT DOWN functions do not work. All other functions work. -Continued	When FOOT UP and FOOT DOWN buttons are pressed, the table will not move (all other functions work). -Continued	Foot actuator assembly is malfunctioning.	Replace suspect foot actuator assembly with known working foot actuator assembly.	Replace actuator motor or foot actuator assembly. Refer to para 4.16 or 4.11.
		PC control board is malfunctioning.	Refer to Figure 2-2 for this check. Press FOOT UP and then FOOT DOWN button while observing the PC control board. The FOOT UP L.E.D. should illuminate when the FOOT UP button is pressed and the FOOT DOWN L.E.D. should illuminate when the FOOT DOWN button is pressed. If not, the PC control board is malfunctioning.	Replace PC control board. Refer to para 4.3 or 4.4.
BACK UP function works, but BACK DOWN function does not or BACK DOWN function works, but BACK UP function does not. All other functions work.	One function operates properly, but the other does not.	Wire connections loose.	Check all wiring connections to back actuator assembly.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Back actuator assembly is malfunctioning.	Replace suspect back actuator assembly with known working back actuator assembly.	Replace actuator motor or back actuator assembly. Refer to para 4.16 or 4.7.
		PC control board is malfunctioning (relay for up or down function is malfunctioning).	Refer to Figure 2-2 for this check. Press BACK UP and then BACK DOWN button while observing the PC control board. The BACK UP L.E.D. should illuminate when the BACK UP button is pressed and the BACK DOWN L.E.D. should illuminate when the BACK DOWN button is pressed. If not, the PC control board is malfunctioning.	Replace PC control board. Refer to para 4.3 or 4.4.
		Hand control switch panel of hand control is malfunctioning (switch membrane is malfunctioning).	Replace suspect hand control switch panel with known working hand control switch panel.	Replace hand control switch panel. Refer to para 4.23, 4.24, or 4.26.
		BACK UP or BACK DOWN footswitch is malfunctioning.	Perform a continuity check on suspect foot switch.	Replace footswitch. Refer to para 4.31 or 4.34.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
TILT UP function works but TILT DOWN function does not or TILT DOWN function works, but TILT UP function does not. All other functions work.	One function operates properly, but the other does not.	Wire connections loose.	Check all wiring connections to tilt actuator assembly.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Tilt actuator assembly is malfunctioning.	Replace suspect tilt actuator assembly with known working tilt actuator assembly.	Replace actuator motor or tilt actuator assembly. Refer to para 4.16 or 4.5.
		PC control board is malfunctioning (relay for up or down function is malfunctioning).	Refer to Figure 2-2 for this check. Press TILT UP and then TILT DOWN button while observing the PC control board. The TILT UP L.E.D. should illuminate when the TILT UP button is pressed and the TILT DOWN L.E.D. should illuminate when the TILT DOWN button is pressed. If not, the PC control board is malfunctioning.	Replace PC control board. Refer to para 4.3 or 4.4.
		Hand control switch panel of hand control is malfunctioning (switch membrane is malfunctioning).	Replace suspect hand control switch panel with known working hand control switch panel.	Replace hand control switch panel. Refer to para 4.23, 4.24, or 4.26.
		TILT UP or TILT DOWN footswitch is malfunctioning.	Perform a continuity check on suspect footswitch.	Replace footswitch. Refer to para 4.31 or 4.34.
TABLE UP function works, but TABLE DOWN function does not or TABLE DOWN function works, but TABLE UP function does not. All other functions work.	One function operates properly, but the other does not.	Wire connections loose.	Check all wiring connections to base actuator.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Either base down limit switch or base up limit switch is malfunctioning.	Perform continuity check on N.C. limit switches (limit switch tripped = open).	Replace base up limit switch (Refer to para 4.18) or base down limit switch (Refer to para 4.17).
		Base actuator assembly is malfunctioning.	Replace suspect base actuator assembly with known working base actuator assembly.	Replace base actuator assembly. Refer to para 4.13.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
TABLE UP function works, but TABLE DOWN function does not or TABLE DOWN function works, but TABLE UP function does not. All other functions work. -Continued	One function operates properly, but the other does not. -Continued	PC control board is malfunctioning (relay for up or down function is malfunctioning).	Refer to Figure 2-2 for this check. Press TABLE UP and then TABLE DOWN button while observing the PC control board. The TABLE UP L.E.D. and BRAKE/BASE L.E.D. should illuminate when the TABLE UP button is pressed and the TABLE DOWN L.E.D. and the BRAKE/BASE L.E.D. should illuminate when the TABLE DOWN button is pressed. If not, the PC control board is malfunctioning.	Replace PC control board. Refer to para 4.3 or 4.4.
		Hand control switch panel of hand control is malfunctioning (switch membrane is malfunctioning).	Replace suspect hand control switch panel with known working hand control panel.	Replace hand control switch panel. Refer to para 4.23, 4.24, or 4.26
		TABLE UP or TABLE DOWN footswitch is malfunctioning.	Perform a continuity check on suspect footswitch.	Replace footswitch. Refer to para 4.31 or 4.34.
FOOT UP function works, but FOOT DOWN function does not or FOOT DOWN function works, but FOOT UP function does not. All other functions work.	One function operates properly, but the other does not.	Wire connections loose.	Check all wiring connections to foot actuator assembly.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
		Foot actuator assembly is malfunctioning.	Replace suspect foot actuator assembly with known working foot actuator assembly.	Replace actuator motor or foot actuator assembly. Refer to para 4.16 or 4.11.
		PC control board is malfunctioning (relay for up or down function is malfunctioning).	Refer to Figure 2-2 for this check. Press FOOT UP and then FOOT DOWN button while observing the PC control board. The FOOT UP L.E.D. should illuminate when the FOOT UP button is pressed and the FOOT DOWN L.E.D. should illuminate when the FOOT DOWN button is pressed. If not, the PC control board is malfunctioning.	Replace PC control board. Refer to para 4.3 or 4.4.
		Hand control switch panel of hand control is malfunctioning (switch membrane is malfunctioning).	Replace suspect hand control switch panel with known working hand control switch panel.	Replace hand control switch panel. Refer to para 4.23, 4.24, or 4.26.
		FOOT UP or FOOT DOWN footswitch is malfunctioning.	Perform a continuity check on suspect footswitch.	Replace footswitch. Refer to para 4.31 or 4.34.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
FOOT UP function works, but FOOT DOWN function does not or FOOT DOWN function works, but FOOT UP function does not. All other functions work. - Continued	FOOT UP function will not work. FOOT DOWN function works.	Treatment pan assembly is not pushed in all the way.	Check that treatment pan assembly is pushed in all the way.	Push treatment pan assembly in all the way.
		Pan safety switch is out of adjustment.	Check to see if pan safety limit switch is being tripped by treatment pan assembly.	Adjust pan safety limit switch so it is tripped when treatment pan assembly is pushed in all the way. Refer to para 4.19.
		Pan safety limit switch is malfunctioning.	Perform continuity check on pan safety limit switch (switch tripped = closed).	Replace pan safety limit switch. Refer to para 4.19.
TABLE DOWN, BACK DOWN, and TILT UP functions do not work. All other functions work.	Only the TABLE DOWN, BACK DOWN, and TILT UP functions do not work. All other functions work.	***Applies to early units only.*** Headlock is being deflected by an object such as a stool, cabinet, or floor.	Check to see if headrest is in contact with an object, deflecting the headlock bar. On programmable tables, the PC control board will sound a warning beep every two seconds for as long as the headlock is deflected.	Remove object causing headrest to deflect.
		Applies to early units only. Headlock limit switch is out of adjustment.	Check if headlock limit switch is being tripped when headlock mounting bracket is in normal position (normal position is not deflected from back section). Limit switch should be tripped. On programmable tables, if the limit switch is not tripped, the PC control board will sound a warning beep every two seconds until limit switch is tripped (headlock is not deflected).	If headlock limit switch is not being tripped, adjust. Refer to para 4.10.
		Applies to early units only. Headlock limit switch is malfunctioning.	Perform continuity check on N.O. limit switch (tripped = closed). On programmable tables, the PC control board will sound a warning beep every two seconds for as long as the headlock is deflected (limit switch = closed).	Replace headlock limit switch. Refer to para 4.10.

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
Applies to early units only. TABLE DOWN, BACK DOWN, and TILT UP functions still move even though headlock limit switch is no longer tripped (headlock mounting bracket has been deflected away from back section allowing headlock limit switch to untrip).	Even though headlock limit switch is no longer tripped, TABLE DOWN, BACK DOWN, and TILT UP functions still move.	Back actuator limit switch is out of adjustment.	Check if back actuator limit switch is being tripped when BACK function is lowered below +30°.	If back actuator limit switch is not being tripped when BACK function is lowered below +30°, adjust limit switch. Refer to para 4.9.
The Back, Tilt, or Foot function drifts by itself.	Function operates properly otherwise.	Motor actuator brake is malfunctioning.	Replace suspect actuator brake components with new components.	Replace actuator brake components. Refer to para 4.16.
Base function drifts by itself.	Base function operates properly otherwise.	Base brake is malfunctioning.	Replace suspect base actuator with known working base actuator.	Replace base actuator. Refer to para 4.13.
Table moves fine for light patient, but will not move or moves slowly for very heavy patient.	Heavy patients cause table to malfunction.	Low voltage is being supplied to table.	Check voltage at wall receptacle - should be 115 ±0.5 VAC.	Correct low voltage situation at wall receptacle.
		Table overloaded with too heavy of a patient.	Maximum weight capacity of table is 325 lbs (147.4 kg).	Inform table operator of weight limitation.
		Capacitor for suspect function is weak.	Replace suspect capacitor with known working capacitor.	Replace capacitor.
Whirling or squeaking noise is heard when an actuator assembly is being run.	Noisy actuator.	Foreign matter on ball screw threads and / or lack of lubricant.	Check for foreign matter on ball screw threads. Check for lack of lubricant on ball screw threads.	Clean all foreign matter off of ball screw threads. Coat ball screw threads with STP treatment oil or equivalent. If actuator assembly is still noisy, replace it.
Excessive sideways play of table top.	Table is not stable and can be moved from side to side.	Eccentric bearing(s) not tight or chain assemblies are loose.	Check for loose eccentric bearing(s) and check tension of chain assemblies.	Adjust eccentric bearing(s) or adjust tension of chain assembly. Refer to para 4.21 or 4.20.
		Base slide assembly is worn or deformed.	Check condition of base slide assembly.	Replace base slide assembly.
		Table base is not resting firmly on floor.	Check to verify all four leveling screws are contacting the floor.	Adjust the leveling screws; there is one located under each corner of the base.
Headrest is not operating properly.	Headrest drifts downward while supporting patients head.	Headrest is out of adjustment.	Check adjustment of headrest.	Adjust headrest. Refer to para 4.37.
	Headrest locking handles pop out of locked position.	Headrest handles handle stops need adjusted.	Check adjustment of headrest handles handle stops.	Adjust headrest handles handle stops. Refer to para 4.38.
The Troubleshooting Guide entries below apply only to the programmable tables (411-012 / -014 / -017 / -018)				
HOME POSITION function does not operate properly. All other functions work.	Nothing happens when the HOME POSITION button is pressed.	Hand control switch panel of hand control is malfunctioning (switch membrane is malfunctioning).	Replace suspect hand control switch panel with known working hand control switch panel.	Replace hand control switch panel. Refer to para 4.24 or 4.26.

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
HOME POSITION function does not operate properly. All other functions work. -Continued	Nothing happens when the HOME POSITION button is pressed. -Continued	HOME POSITION footswitch is malfunctioning.	Perform continuity check on HOME POSITION footswitch.	Replace footswitch. Refer to para 4.32 or 4.34.
		Base down limit switch is tripped.	Table top is already lowered all the way down, tripping limit switch.	Inform operator of minimum height of table.
		Base down limit switch is malfunctioning - stuck closed.	Perform continuity check on base down limit switch (limit switch is N.C. when not tripped).	Replace base down limit switch. Refer to para 4.17.
		Base actuator is running so slow that the minimum table top height is not reached before the 18 second time limit stops the base actuator.	Replace the base actuator and / or base capacitor with known working components.	Replace base capacitor. Refer to para 4.14. If this does not correct the problem, replace the base actuator. Refer to para 4.13.
		Applies to early units only. Headlock is being deflected by an object such as a stool, cabinet, or floor.	Check to see if headrest is in contact with an object, deflecting the headlock bar. The PC control board will sound a warning beep every two seconds for as long as the headlock is deflected.	Remove object causing headrest to deflect.
		Applies to early units only. Headlock limit switch is out of adjustment.	Check if headlock limit switch is being tripped when headlock mounting bracket is in normal position (normal position is not deflected from back section). Limit switch should be tripped.	If headlock limit switch is not being tripped, adjust. Refer to para 4.10.
		Applies to early units only. Headlock limit switch is malfunctioning.	Perform continuity check on N.O. limit switch (tripped = closed)	Replace headlock limit switch. Refer to para 4.10.
	When HOME POSITION button is pressed, the base actuator continues to run/hum when the table top is completely lowered (for approximately another 7 - 10 seconds).	Base down limit switch is malfunctioning (stuck closed).	Perform continuity check on N.C. base down limit switch (tripped = open).	Replace base down limit switch. Refer to para 4.17. Because the base actuator does not freewheel, it may have been damaged. Check and replace if necessary. Refer to para 4.13.
		Base down limit switch is out of adjustment.	Check adjustment of base down limit switch.	Adjust base down limit switch. Refer to para 4.17.
Table cannot be programed or moved to previously programmed position.	When operator attempts to store a position into the PC control board's memory, it is not successful.	Incorrect steps taken for entry of position.	Refer to the Operator's manual for proper procedure.	Refer the operator to the Operator's manual for proper procedure.
		Hand control switch panel of hand control is malfunctioning (a switch membrane is malfunctioning).	Replace suspect hand control switch panel with known working hand control switch panel.	Replace hand control switch panel. Refer to para 4.24 or 4.26.
		Position "1", "2", "3", "4", or PROGRAM footswitch is malfunctioning.	Perform continuity check on suspect footswitch.	Replace footswitch. Refer to para 4.32 or 4.34.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
Table cannot be programed or moved to previously programmed position. - Continued	When operator attempts to store a position into the PC control board's memory, it is not successful. -Continued	PC control board cannot read a position sensor correctly, resulting in an error code.	Unplug table, plug table back in, and then look for presence of error codes.	If error codes are displayed on hand control, use error code chart in Table 5-1 to determine cause of error or see below in this Troubleshooting Guide.
		PC control board is malfunctioning.	Replace suspect PC control board with known working PC control board.	Replace PC control board. Refer to para 4.4.
		PC control board needs calibrated.	–	Perform calibration of PC control board. Refer to para 4.2.
	Table does not move to its correct programmed position when Position "1", "2", "3", or "4" button is pressed.	Treatment pan assembly is not pushed in all the way.	Check if the PAN OUT lamp is flashing; will flash as long as a Position button remains pressed and treatment pan assembly is not stowed.	Push treatment pan assembly in all the way.
		No position was programmed into the PC control board's memory for that Position button.	Check if the PROGRAM MODE lamp is flashing; it will flash when a Program Position button is pressed which does not have a valid table position stored into its memory.	Inform the operator of the proper procedure for programming a table top position into memory for a Position button.
		The PC control board cannot read a position sensor correctly, resulting in an error code.	Unplug table, plug table back in, and then observe hand control for presence of error codes.	If error codes are displayed on hand control, use error code chart in Table 5-1 to determine cause of error.
		PC control board is malfunctioning.	Replace suspect PC control board with known working PC control board.	Replace PC control board. Refer to para 4.4.
		Hand control switch panel of hand control is malfunctioning (a switch membrane is malfunctioning).	Replace suspect hand control switch panel with known working hand control switch panel.	Replace hand control switch panel. Refer to para 4.24 or 4.26.
		Position "1", "2", "3", or "4" footswitch is malfunctioning.	Perform continuity check on suspect footswitch.	Replace footswitch. Refer to para 4.32 or 4.34.
		Applies to early units only. Headlock is being deflected by an object such as a stool, cabinet, or floor.	Check to see if headrest is in contact with an object, deflecting the headlock bar. The PC control board will sound a warning beep every two seconds for as long as the headlock is deflected.	Remove object causing headrest to deflect.

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
Table cannot be programed or moved to previously programmed position. - Continued	Table moves toward the correct programmed position, but one of the functions stops short.	The position sensor for the suspect function is out of adjustment; the position sensor travels pasts its limit and enters a “dead spot” (a dead spot is where the voltage output of the sensor does not change even when its associated function is moving).	Run the function to one of its limits and connect a multimeter to the Test Points for the suspect position sensor (Refer to para 4.40, 4.41, 4.42, or 4.43). Then, press a button for 1/10 second and observe multimeter reading to see if it has changed. If it hasn’t, the position sensor is in a dead spot and must be readjusted. Repeat for functions other limit.	Adjust the position sensor for the suspect function. If the adjustment is not successful, replace the position sensor. Refer to para 4.40, 4.41, 4.42, or 4.43.
When a Programmed Position button “1”, “2”, “3”, or “4” button is pressed, nothing happens. All other functions work properly.	When table is unplugged and then plugged back in, **error code 11** (system calibration not completed due to error condition) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	The PC control board has detected an error condition such as headlock was deflected, pan safety limit switch was untripped, STOP button was pressed, etc., which has prevented the system calibration routine from completing successfully.	–	Perform a new system calibration. Refer to para 4.2.
	When table is unplugged and then plugged back in, **error code 12** (invalid data received from hand control or foot control) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	The PC control board has detected a problem with the hand control or foot control.	Check the hand control PC board and foot control interface board .	Replace hand control PC board (Refer to para 4.25 or 4.26) or foot control PC board (Refer to para 4.27 or 4.30).
		PC control board is malfunctioning.	Replace PC control board with known working PC control board.	Replace PC control board. Refer to para 4.4.
	When table is unplugged and then plugged back in, **error code 21** (base position sensor output voltage did not change when expected during a position recall) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	Base position sensor is out of adjustment or bolt head to which position sensor is attached is loose and is not rotating properly.	Check to see if base position sensor is adjusted correctly or if bolt is loose.	Adjust the base position sensor. Refer to para 4.43.
		Base position sensor is malfunctioning.	Replace base position sensor with known working base position sensor.	Replace base position sensor. Refer to para 4.43.
		Base reducer assembly is malfunctioning.	Check to see if the base reducer assembly is set up and operating properly.	Repair the base reducer assembly. Refer to para 4.43.

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
When a Programmed Position button "1", "2", "3", or "4" button is pressed, nothing happens. All other functions work properly. - Continued	When table is unplugged and then plugged back in, **error code 21** (base position sensor output voltage did not change when expected during a position recall) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	Wiring connections are dirty, torn, or loose.	Check all wiring connections from base position sensor and PC control board.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
	When table is unplugged and then plugged back in, **error code 22** (base position sensor output voltage did not increase or decrease as expected during system calibration or position recall) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	Base position sensor is out of adjustment or bolt head to which position sensor is attached is loose and is not rotating properly.	Check to see if base position sensor is adjusted correctly or if bolt is loose.	Adjust the base position sensor. Refer to para 4.43.
		Base reducer assembly is malfunctioning.	Check to see if the base reducer assembly is set up and operating properly.	Repair the base reducer assembly. Refer to para 4.43.
		Base position sensor is malfunctioning.	Replace base position sensor with known working base position sensor.	Replace base position sensor. Refer to para 4.43.
		Wiring connections are dirty, torn, or loose.	Check all wiring connections from base position sensor and PC control board.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
	When table is unplugged and then plugged back in, **error code 23** (program position not stored due to A/D conversion error reading base position sensor) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	The PC control board is malfunctioning.	Replace PC control board with known working PC control board.	Replace PC control board. Refer to para 4.4.
	When table is unplugged and then plugged back in, **error code 24** (tilt position sensor output voltage did not change when expected during a position recall) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	Tilt position sensor is out of adjustment or bolt head to which position sensor is attached is loose and is not rotating propelry.	Check to see if tilt position sensor is adjusted correctly or if bolt is loose.	Adjust the tilt position sensor. Refer to para 4.41.
		Tilt position sensor is malfunctioning.	Replace tilt position sensor with known working tilt position sensor.	Replace tilt position sensor. Refer to para 4.41.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
When a Programmed Position button "1", "2", "3", or "4" button is pressed, nothing happens. All other functions work properly. - Continued	When table is unplugged and then plugged back in, **error code 24** (tilt position sensor output voltage did not change when expected during a position recall) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them. -Continued	Wiring connections are dirty, torn, or loose.	Check all wiring connections from tilt position sensor and PC control board.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
	When table is unplugged and then plugged back in, **error code 25** (tilt position sensor output voltage did not increase or decrease as expected during system calibration or position recall) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	Tilt position sensor is out of adjustment or bolt head to which position sensor is attached is loose and is not rotating properly.	Check to see if tilt position sensor is adjusted correctly or if bolt is loose.	Adjust the tilt position sensor. Refer to para 4.41.
		Tilt position sensor is malfunctioning.	Replace tilt position sensor with known working tilt position sensor.	Replace tilt position sensor. Refer to para 4.41.
		Wiring connections are dirty, torn, or loose.	Check all wiring connections from tilt position sensor and PC control board.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
	When table is unplugged and then plugged back in, **error code 26** (program position not stored due to A/D conversion error reading tilt position sensor) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	The PC control board is malfunctioning.	Replace PC control board with known working PC control board.	Replace PC control board. Refer to para 4.4.
	When table is unplugged and then plugged back in, **error code 31** (back position sensor output voltage did not change when expected during a position recall) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	Back position sensor is out of adjustment or bolt head to which position sensor is attached is loose and is not rotating properly.	Check to see if back position sensor is adjusted correctly or if bolt is loose.	Adjust the back position sensor. Refer to para 4.42.
		Back position sensor is malfunctioning.	Replace back position sensor with known working back position sensor.	Replace back position sensor. Refer to para 4.42.
		Wiring connections are dirty, torn, or loose.	Check all wiring connections from back position sensor and PC control board.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
When a Programmed Position button "1", "2", "3", or "4" button is pressed, nothing happens. All other functions work properly. - Continued	When table is unplugged and then plugged back in, **error code 32** (back position sensor output voltage did not increase or decrease as expected during system calibration or position recall) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	Back position sensor is out of adjustment or bolt head to which position sensor is attached is loose and is not rotating properly.	Check to see if back position sensor is adjusted correctly or if bolt is loose.	Adjust the back position sensor. Refer to para 4.42.
		Back position sensor is malfunctioning.	Replace back position sensor with known working back position sensor.	Replace back position sensor. Refer to para 4.42.
	When table is unplugged and then plugged back in, **error code 32** (back position sensor output voltage did not increase or decrease as expected during system calibration or position recall) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them. - Continued	Wiring connections are dirty, torn, or loose.	Check all wiring connections from back position sensor and PC control board.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
	When table is unplugged and then plugged back in, **error code 33** (program position not stored due to A/D conversion error reading tilt position sensor) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	The PC control board is malfunctioning.	Replace PC control board with known working PC control board.	Replace PC control board. Refer to para 4.4.
	When table is unplugged and then plugged back in, **error code 34** (foot position sensor output voltage did not change when expected during a position recall) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	Foot position sensor is out of adjustment or bolt head to which position sensor is attached is loose and is not rotating properly.	Check to see if foot position sensor is adjusted correctly or if bolt is loose.	Adjust the foot position sensor. Refer to para 4.40.
		Foot position sensor is malfunctioning.	Replace foot position sensor with known working foot position sensor.	Replace foot position sensor. Refer to para 4.40.
		Wiring connections are dirty, torn, or loose.	Check all wiring connections from foot position sensor and PC control board.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
When a Programmed Position button "1", "2", "3", or "4" button is pressed, nothing happens. All other functions work properly. - Continued	When table is unplugged and then plugged back in, **error code 35** (foot position sensor output voltage did not increase or decrease as expected during system calibration or position recall) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	Foot position sensor is out of adjustment or bolt head to which position sensor is attached is loose and is not rotating properly.	Check to see if foot position sensor is adjusted correctly or if bolt is loose.	Adjust the foot position sensor. Refer to para 4.40.
		Foot position sensor is malfunctioning.	Replace foot position sensor with known working foot position sensor.	Replace foot position sensor. Refer to para 4.40.
		Wiring connections are dirty, torn, or loose.	Check all wiring connections from foot position sensor and PC control board.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
	When table is unplugged and then plugged back in, **error code 36** (program position not stored due to A/D conversion error reading foot position sensor) is displayed on hand control. See Table 5-1 for explanation of error codes and how to read them.	The PC control board is malfunctioning.	Replace PC control board with known working PC control board.	Replace PC control board. Refer to para 4.4.
STOP function does not operate properly. All other functions work.	Function does not stop when the STOP button is pressed.	Hand control switch panel of hand control is malfunctioning (switch membrane is malfunctioning).	Replace suspect hand control switch panel with known working hand control switch panel.	Replace hand control switch panel. Refer to para 4.24 or 4.26.
		STOP footswitch is malfunctioning.	Perform continuity check on STOP footswitch.	Replace footswitch. Refer to para 4.32 or 4.34.

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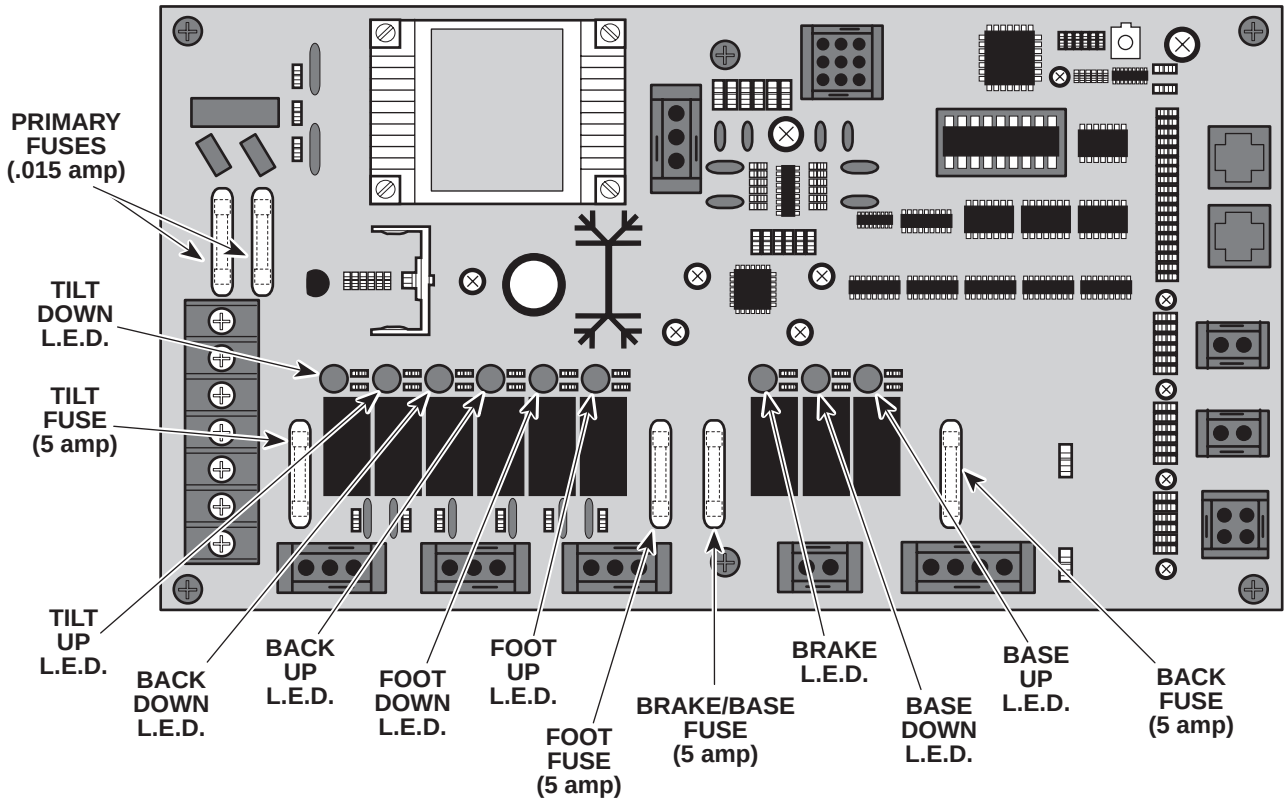
PROGRAMMABLE PC CONTROL BOARD
(Units with Serial Numbers: GV1000 thru Present)



NON-PROGRAMMABLE PC CONTROL BOARD
(Units with Serial Numbers: GT1000 thru Present)

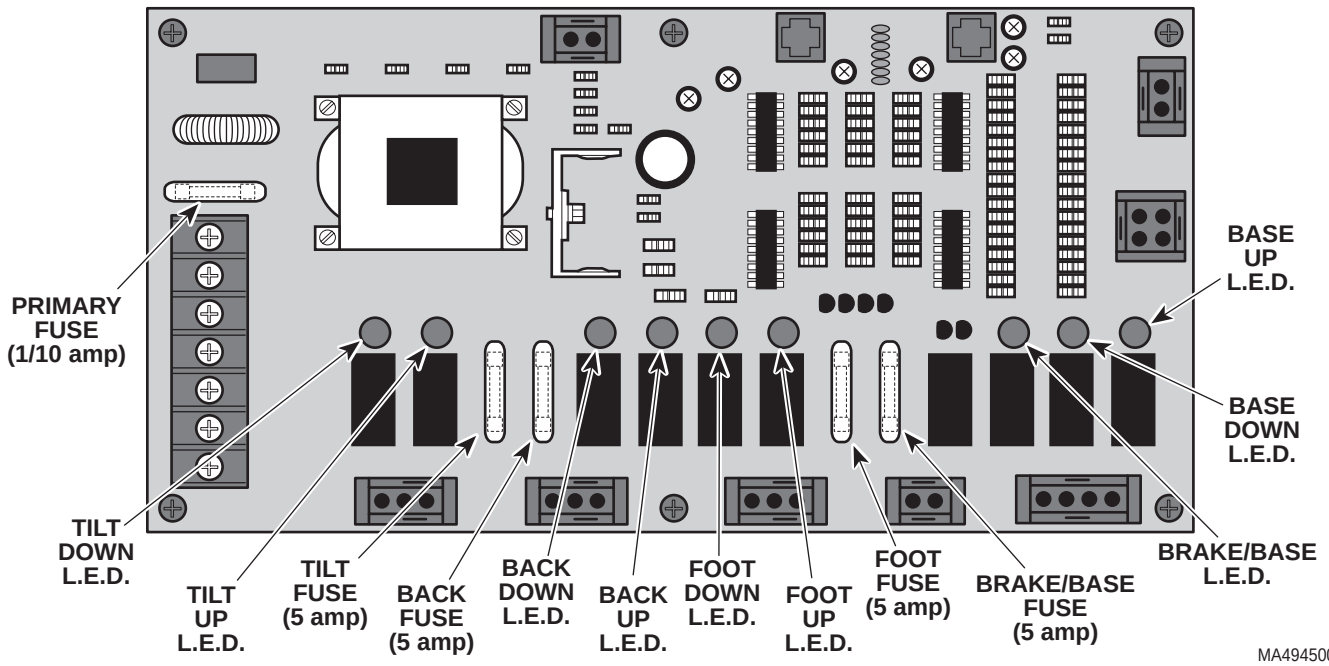


Figure 2-2. Fuse and Troubleshooting L.E.D's Location (Sheet 1 of 3)

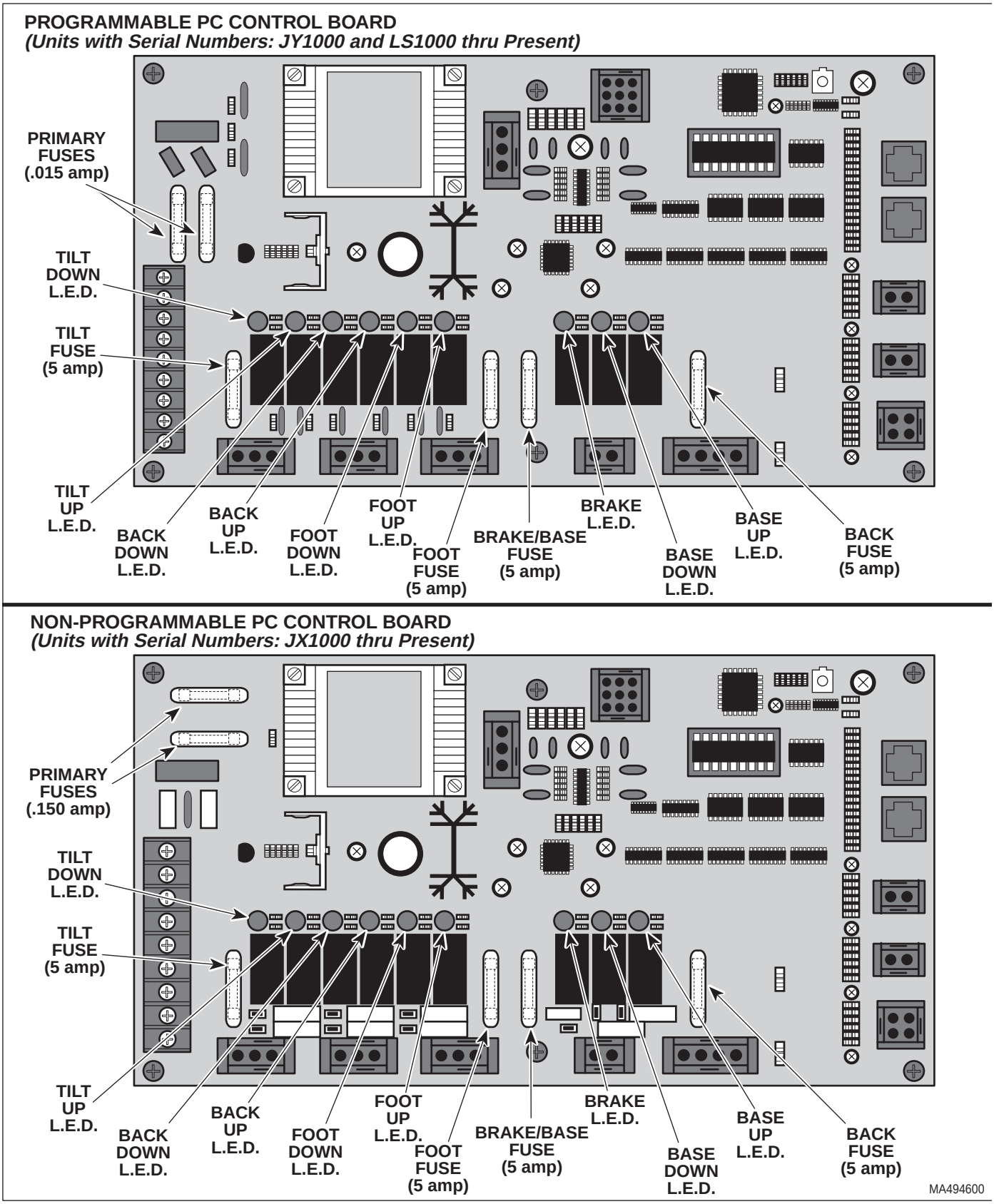
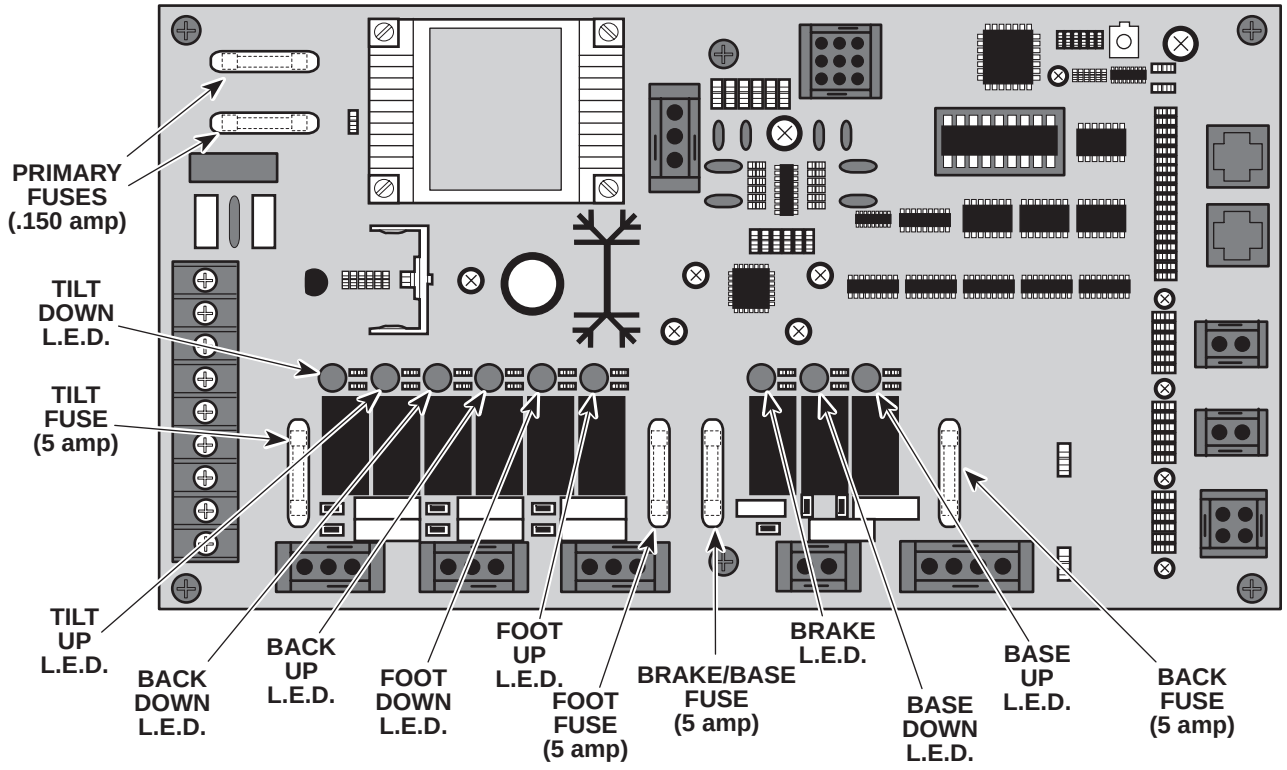


Figure 2-2. Fuse and Troubleshooting L.E.D.'s Location (Sheet 2 of 3)

SECTION II
TESTING AND TROUBLESHOOTING

PROGRAMMABLE PC CONTROL BOARD
(Units with Serial Numbers: HZ1000 thru Present)



NON-PROGRAMMABLE PC CONTROL BOARD
(Units with Serial Numbers: HY1000 thru Present)

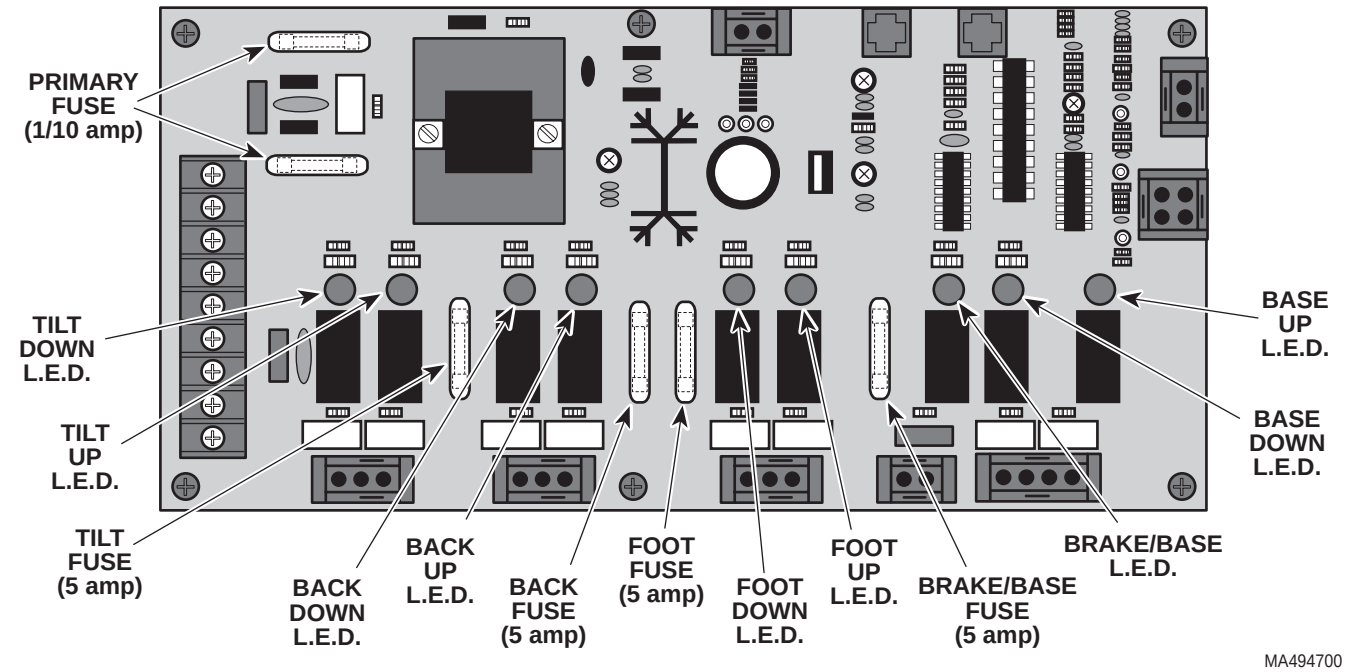


Figure 2-2. Fuse and Troubleshooting L.E.D.'s Location (Sheet 3 of 3)

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SECTION III
SCHEDULED MAINTENANCE

3.1 Scheduled Maintenance

Table 3-1 is a Scheduled Maintenance Chart which lists the inspections and services that should be performed periodically on the 411 (75L) Table. These inspections and services should be performed as often as indicated in the chart.

Table 3-1. Troubleshooting Guide

Interval	Inspection or Service	What to Do
Semi-annually	Obvious damage	Visually check condition of table for obvious damage such as: cracks in components, missing components, dents in components, or any other visible damage which would cause the table to be unsafe to operate or would compromise its performance. Repair table as necessary.
	Fasteners / hardware	Check table for missing or loose fasteners / hardware. Replace any missing hardware and tighten any loose hardware as necessary.
	Warning and instructional decals	Check for missing or illegible decals (see parts illustrations for decal locations and descriptions). Replace decals as necessary.
	Pivot points / moving parts / accessories	Lubricate all exposed pivot points, moving parts, and accessories with silicone based lubricant.
	Hand control	Check that hand control works correctly. Make sure all switch membranes work correctly. If necessary, replace hand control switch panel. Refer to para 4.23 or 4.24, or 4.26.
	Foot control (optional)	Check that foot control works correctly. Make sure all footswitches operate properly. Replace any malfunctioning footswitches. Refer to para 4.31, 4.32, 4.33, or 4.34.
	Ball screws of actuator assemblies	Extend each actuator assembly and wipe ball screw threads down with a rag to remove foreign matter. Coat as much of the ball screw threads as possible with STP treatment oil or equivalent. Run each actuator assembly to both ends of its travel a couple of times to spread the oil evenly over all of the ball screw threads and then remove excess oil. If oil does not correct a squealing actuator assembly, replace actuator assembly.
	Drifting of actuator assemblies	Check each actuator assembly for drift. Replace actuator assembly brake components as necessary. Refer to para 4.16.
	Base actuator limit switches	Check that the base up limit switch and the base down limit switch stop the base actuator before it reaches its up or down limit; the base actuator does not freewheel and can be damaged if it reaches a limit. Adjust the limit switches if necessary. Refer to para 4.17 or 4.18.
	Foot extension	Check that foot extension can be easily removed. Make sure foot section is latched securely in place when installed.
	Stirrup assemblies	Check that stirrup assemblies lock into one of three positions. Check for wear. Replace worn components as necessary. Refer to para 4.39.
	Pan safety limit switch	Check that pan safety limit switch is tripped when pan assembly is in fully stowed position. Adjust or replace pan safety limit switch if necessary. Refer to para 4.19.
	Excessive play in column assembly	Check that column assembly does not have excessive side to side play. If necessary, adjust eccentric bearings or tighten chain. Refer to para 4.21 or 4.20.
	Headrest	Check that headrest is adjusted properly and will not drift downward on its own under 45 lbs. (20.4 kg) of static weight. If necessary, adjust headrest. Refer to para 4.37.
	Treatment pan slides	Check that the treatment pan slides move in and out freely and without noise. Lubricate the pan slides with a silicone based lubricant.
	Upholstery	Check all upholstery for rips, tears, or excessive wear. Replace cushions as necessary.
	Accessories	Check that all accessories have all of their components and that they function properly. If necessary, repair or replace the accessory.
	Electrical receptacles (applies to 115 VAC units only)	Check that the electrical receptacles are functioning properly. Replace receptacles as necessary.
	Operational Test	Perform an Operational Test to determine if the table is operating within its specifications (Refer to para 2.1). Replace or adjust any malfunctioning components.

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Return To Table Of Contents

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SECTION IV
MAINTENANCE / SERVICE INSTRUCTIONS

4.1 Introduction

WARNING
Refer to the Operator Manual for complete instructions on operating the table. Failure to do so could result in personal injury.

NOTE
Perform an operational test on the table after the repair is completed to confirm the repair was properly made and that all malfunctions were repaired.

The following paragraphs contain removal, installation, repair, and adjustment procedures for the table.

4.2 PC Control Board Calibration (Programmable Tables Only)

A. Clearing PC Control Board Error Code Memory.

(1) Unplug table power cord from outlet receptacle for a minimum of 10 seconds.

NOTE
Figure 4-1 shows the hand control used with later units. The hand control used with early units differs slightly. The clearing procedure is the same for both styles.

(2) Depress and hold the PROGRAM button (1, Figure 4-1) while simultaneously plugging the table power cord into the outlet receptacle.

Observe. The PROGRAM MODE lamp (2) and the PAN OUT lamp (3) will simultaneously illuminate for approximately 5 seconds and then go out.

(3) After the PROGRAM MODE lamp (2) and the PAN OUT lamp (3) go out, release the PROGRAM button (1).

Observe. After approximately 10 to 20 seconds, the PC control board will sound two beeps, indicating the error codes were successfully cleared from memory. If the two beeps do not sound, repeat the entire procedure.

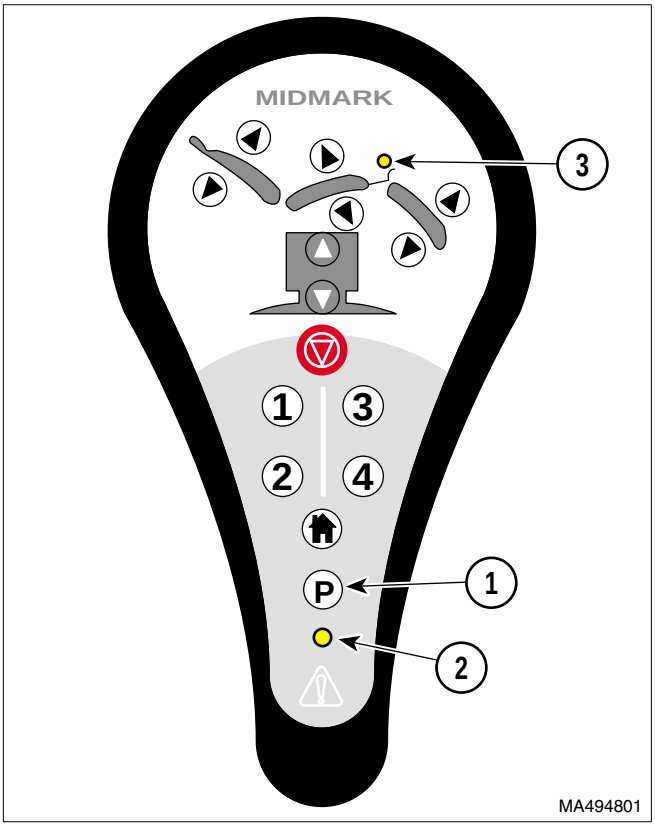

Figure 4-1. Clearing PC Control Board Memory

B. Calibrating PC Control Board.

NOTE
The calibration routine will probably fail if the back section is not completely lowered before the routine is started.
Also, if the headlock is being deflected or the treatment pan assembly is not stowed, the calibration routine will not start.

(1) Run the TABLE DOWN and BACK DOWN functions all the way down.

(2) Unplug table power cord from outlet receptacle for a minimum of 10 seconds.

(3) Depress and hold:
[S/N JY2586 thru present]: **POSITION "1"**
[S/N prior to JY2586]: **POSITION "2","3", PROGRAM** while simultaneously plugging the table power cord into the outlet receptacle (See Figure 4-2).

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Observe. The PROGRAM MODE lamp (1) and the PAN OUT lamp (2) will illuminate for approximately five seconds and will then go out.

(4) After the PROGRAM MODE lamp (1) and the PAN OUT lamp (2) go out, release button(s).

NOTE
If performing calibration procedure using new style foot control, press & release the HOME button, then immediately press and hold the DOWN side of the foot pedal.

(5) Within 5 seconds, press and hold the HOME button.

Observe. The PROGRAM MODE lamp (1) and PAN OUT lamp (2) will illuminate for three seconds and then go out.

NOTE
If the headlock is being deflected or the treatment pan assembly is not stowed, the calibration routine will not start.

If performing calibration procedure using new style foot control, release DOWN button after the PROGRAM MODE lamp and the PAN OUT lamp go out

(6) After the PROGRAM MODE lamp (1) and the PAN OUT lamp (2) go out, release the HOME button.
While table top moves through its calibration routine, apply a steady downward pressure on the back section to prevent it from "bouncing" which can cause the calibration to fail.

Observe. The table top will automatically begin to move; all functions will be run to their limits in the following order: Table Up, Foot Down, Foot Up, Tilt Up, Tilt Down, Back Down, Back Up, and Table Down. When the TABLE DOWN function is completely lowered, the calibration routine is complete. Also, the PC control board will sound a beep every two seconds, indicating a calibration routine is in progress.

(7) Check the hand control; if the PROGRAM MODE lamp (1) and PAN OUT lamp (2) begin to flash, an error condition occurred which resulted in an unsuccessful calibration; repeat the entire procedure.

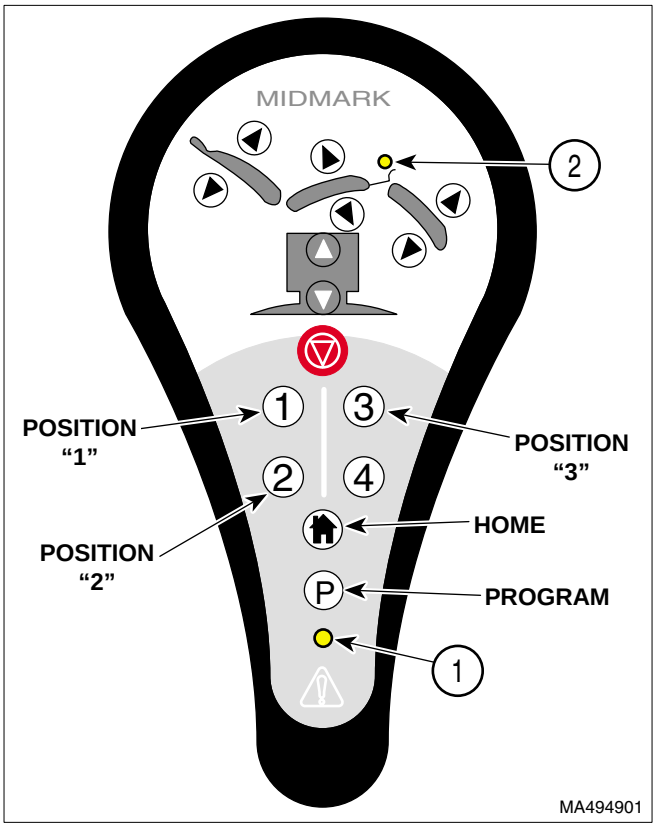

Figure 4-2. PC Control Board Calibration

If the PROGRAM MODE lamp (3) and PAN OUT lamp (2) do not begin to flash, the calibration was successful.

4.3 PC Control Board Removal / Installation (Non-Programmable Tables Only)

A. Removal

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Unplug table power cord from outlet receptacle.

(2) Remove two screws (1, Figure 4-3) and PC board cover (2) from base casting (3).

(3) Tag and disconnect eight wire harnesses (4) from PC control board (5).

(4) Tag and disconnect two modular cords (6) from PC control board (5).

(5) Loosen terminal screws (7); then tag and disconnect wires (8) from terminals of PC control board (5).

(6) Remove six screws (9) and PC control board (5) from base casting (3).

B. Installation

(1) Install PC control board (5) on base casting (3) and secure with six screws (9).

(2) Connect wires (8) to terminals of PC control board (5) and secure by tightening terminal screws (7). Make sure jumper strips (10) are installed.

(3) Connect two modular cords (6) to PC control board (5).

(4) Connect eight wire harnesses (4) to PC control board (5).

(5) Install PC board cover (2) on base casting (3) and secure with two screws (1).

(6) Plug table power cord into outlet receptacle.

4.4 PC Control Board Removal / Installation (Programmable Tables Only)

A. Removal

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Unplug table power cord from outlet receptacle.

(2) Remove two screws (1, Figure 4-4) and PC board cover (2) from base casting (3).

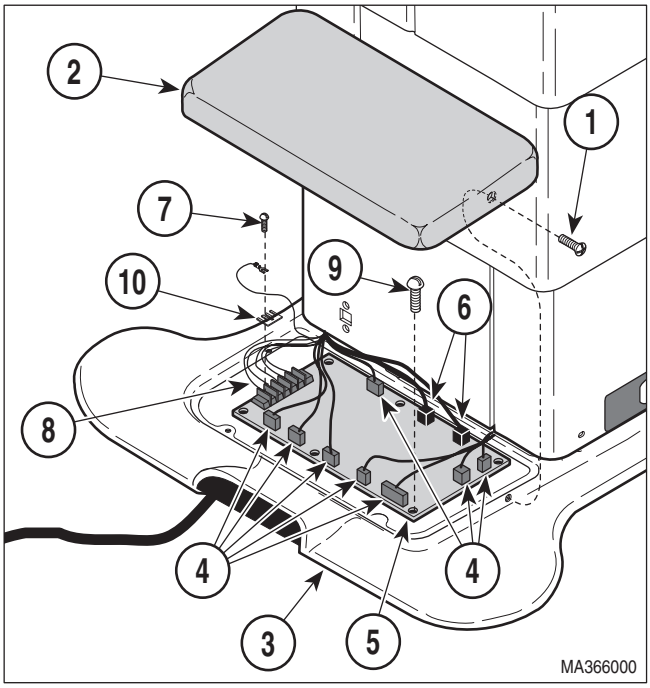

Figure 4-3. PC Control Board Removal / Installation (Non-programmable tables only)

(3) Tag and disconnect ten wire harnesses (4) from PC control board (5).

(4) Tag and disconnect two modular cords (6) from PC control board (5).

(5) Loosen terminal screws (7); then tag and disconnect wires (8) from terminals of PC control board (5).

(6) Remove six screws (9) and PC control board (5) from base casting (3).

B. Installation

(1) Install PC control board (5) on base casting (3) and secure with six screws (9).

(2) Connect wires (8) to terminals of PC control board (5) and secure by tightening terminal screws (7). Make sure jumper strips (10) are installed.

(3) Connect two modular cords (6) to PC control board (5).

(4) Connect ten wire harnesses (4) to PC control board (5).

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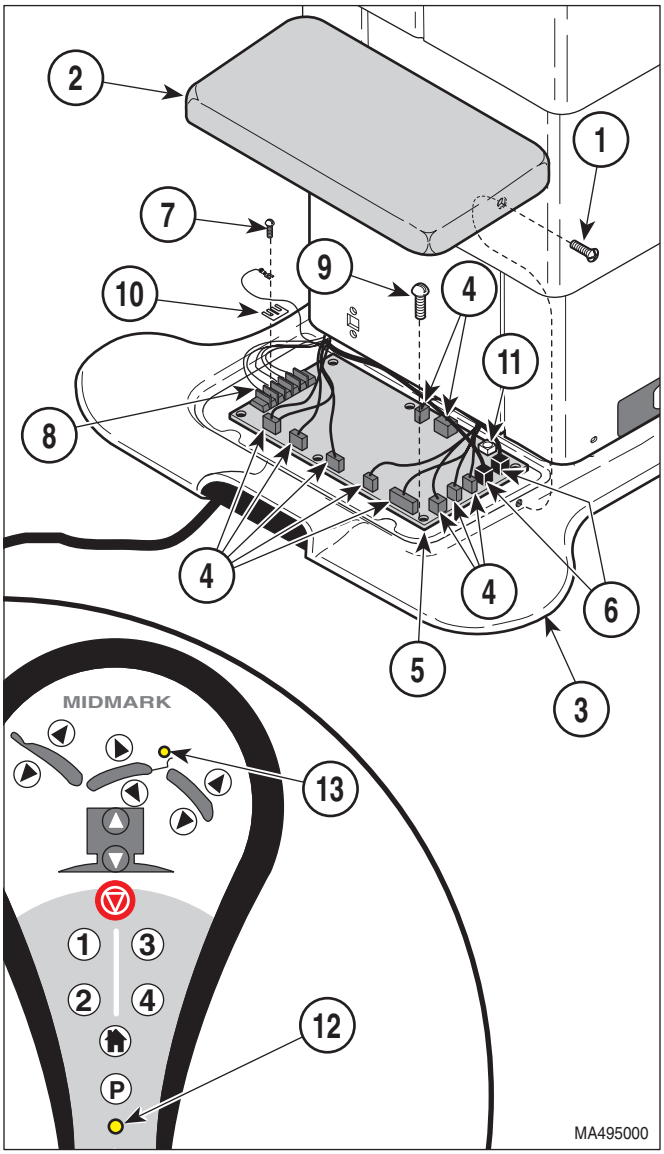

Figure 4-4. PC Control Board Removal / Installation (Programmable Tables Only)

(5) Depress and hold the PROGRAM / FAULT CLEAR button (11) while simultaneously plugging in the table power cord into the outlet receptacle.
Observe. The PROGRAM MODE lamp (12) and the PAN OUT lamp (13) will simultaneously illuminate for approximately three seconds and then go out.

(6) After the PROGRAM MODE lamp (12) and the PAN OUT lamp (13) go out, release the PROGRAM / FAULT CLEAR button (11).
Observe. After approximately 10 to 20 seconds, the PC control board will sound three beeps to indicate that the PC control board's memory has been successfully erased.

(7) Install PC board cover (2) on base casting (3) and secure with two screws (1).

(8) Calibrate the PC control board (Refer to para 4.2).

4.5 Tilt Actuator Removal / Installation

A. Removal

(1) Raise TABLE UP function all the way up.

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(2) Unplug table power cord from outlet receptacle.

(3) Remove four screws (1, Figure 4-5) and R.H. and L.H. outer shrouds (2) from column adapter weldment (3).

(4) Lower middle outer shroud assembly (4) down out of way.

(5) Cut two cable ties (A, Figure 4-6) securing actuator cable to shaft of tilt actuator assembly (1).

(6) Remove two screws (2) and connection cover (3) from column adapter weldment (4).

(7) Cut cable tie (B) securing wire harnesses to capacitor mounting bracket (5).

(8) Disconnect actuator wire (6) from wire (7).

NOTE
Steps 9 thru 12 describe the procedure for 115 VAC units. Use these steps as a guide for 230 VAC units; the steps are similar.

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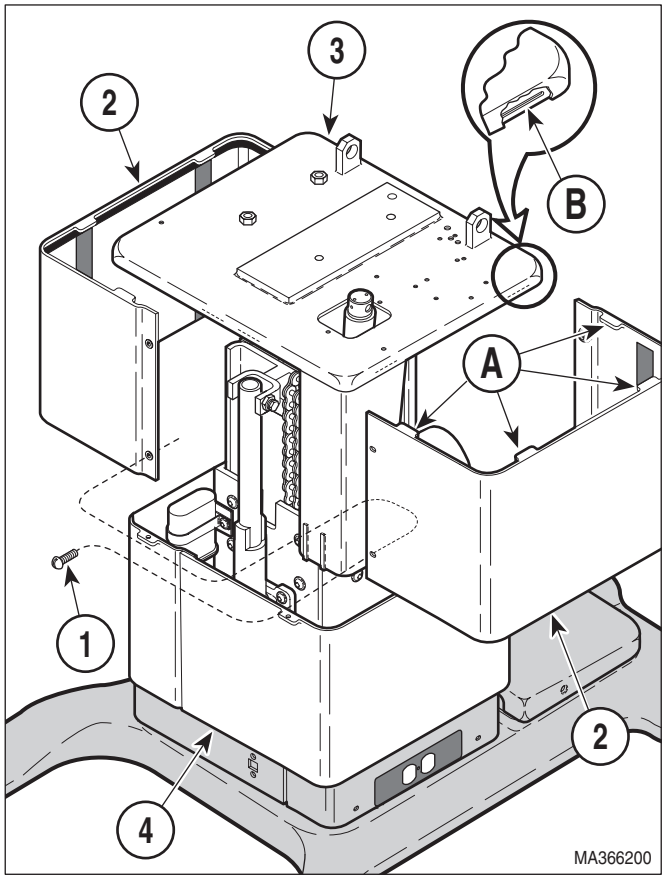

Figure 4-5. Shrouds Removal / Installation

(9) Using screwdriver, pry tab (C) of capacitor mounting bracket (5) outward; then remove tilt capacitor (8) from capacitor mounting bracket.

(10) Remove cap (9) from tilt capacitor (8).

DANGER

A capacitor contains stored electricity. Never touch terminals of a capacitor, even if power has been shut off or disconnected. Always discharge capacitor before touching capacitor terminals or wires. Failure to comply with these instruction could result in serious personal injury or death.

(11) Discharge tilt capacitor (8).

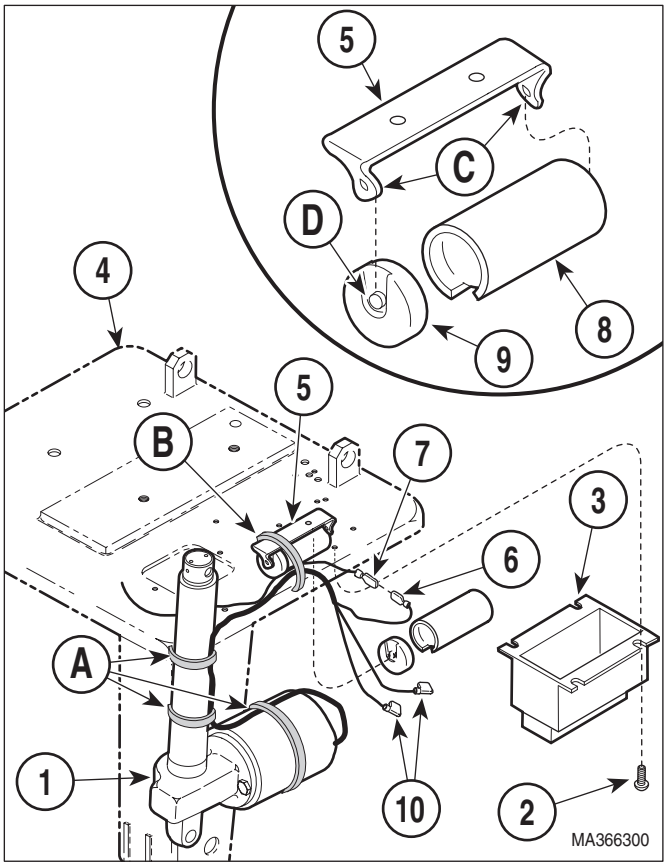

Figure 4-6. Tilt Actuator Wires Disconnection / Connection

(12) Tag and disconnect two actuator wires (10) from terminals of tilt capacitor (8); the yellow and orange wires do not need to be disconnected.

DANGER

Support foot end of table top while removing clevis pin to prevent foot end of table top from falling and striking technician. Failure to comply with these instructions could result in serious personal injury.

(13) Remove two e-rings (1, Figure 4-7) and clevis pin (2) securing base of tilt actuator (3) to column adapter weldment (4).

(14) Remove screw (5), two screws (6), lockwashers (7), and L.H. stirrup housing (8) from seat weldment (9).

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(15) Raise seat weldment (9) up far enough to get access to pivot pin (11). Using a block (A), support seat weldment in this position.

(16) Remove two e-rings (10) from pivot pin (11).

(17) Using a hammer and punch, drive pivot pin (11) out of seat weldment (9) and remove tilt actuator (3) from table.

B. Installation

(1) Install tilt actuator (3, Figure 4-7) on column adapter weldment (4) and secure with clevis pin (2) and two e-rings (1).

NOTE
Steps 2 thru 4 describe the procedure for 115 VAC units. Use these steps as a guide for 230 VAC units; the steps are similar.

(2) Connect two wires (10, Figure 4-6) to terminals of tilt capacitor (8).

(3) Install cap (9) on tilt capacitor (8).

(4) Position bottom of tilt capacitor (8) on capacitor mounting bracket (5) and then push the top of the capacitor inward. Using a screwdriver, force the tab (C) of the capacitor mounting bracket down over the catch (D) of the cap (9). Make sure tilt capacitor is held firmly in place.

(5) Connect actuator wire (6) to wire (7).

(6) Secure bundle of wire harnesses to capacitor mounting bracket (5) with a cable tie (B).

(7) Install connection cover (3) on column adapter weldment (4) and secure with two screws (2).

(8) Secure actuator cable to tilt actuator (1) with two cable ties (A).

(9) Using spanner holes (B, Figure 4-7), unscrew adjustable clevis (12) until it is even with top of actuator rod.

(10) Plug table power cord into outlet receptacle.

(11) Run TILT UP function to extend rod of tilt actuator (3) 3 to 4 in. (7.6 to 10.2 cm).

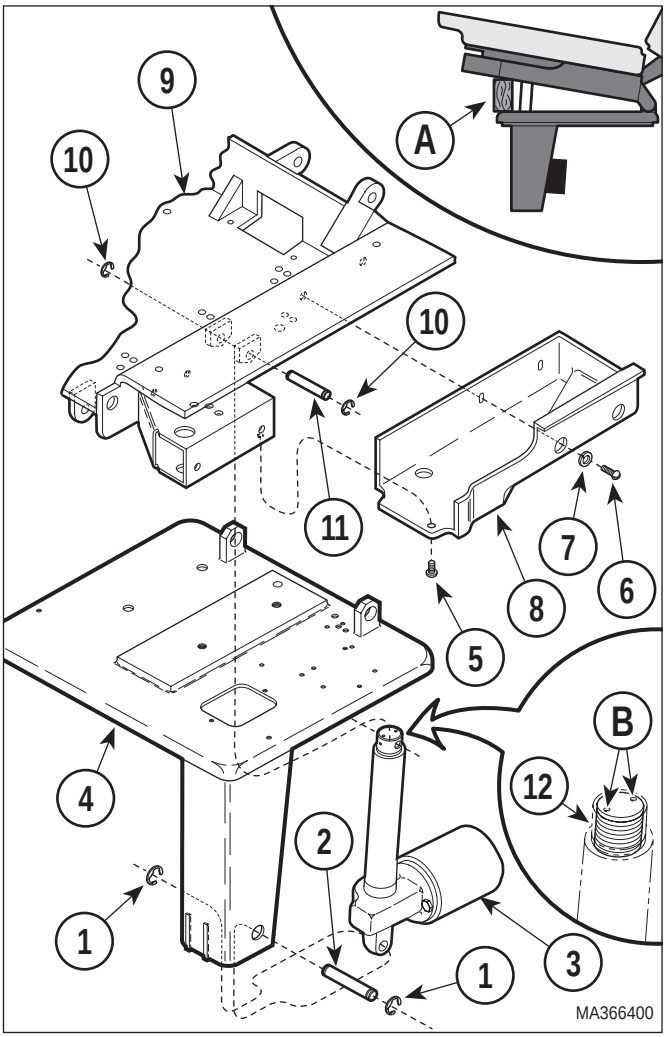

Figure 4-7. Tilt Actuator Removal / Installation

(12) Remove support block (A); then temporarily connect tilt actuator (3) to seat weldment (9) with clevis pin (11).

CAUTION
If tilt actuator does not free wheel at end of stroke, seat weldment is hitting column adapter weldment. Do not allow this condition to exist: premature failure of tilt actuator will result.

(13) Lower TILT DOWN function all the way down (until tilt actuator can be heard free wheeling).

(14) Observe. Seat weldment (9) should be parallel with top of column weldment adapter (4). If seat weldment is parallel with top of column weldment adapter, go to step 19. If seat weldment is not parallel with top of column weldment adapter, go to step 15.

(15) Extend TILT UP function 3 to 4 in. (7.6 to 10.2 cm).

(16) Remove clevis pin (11) and block seat weldment (9) in this position.

(17) Using spanner holes (B), screw adjustable clevis (12) in or out as determined necessary in step 14.

(18) Repeat steps 12 thru 17 until seat weldment (9) is parallel with top of column adapter weldment (4) when tilt actuator (3) is free wheeling at the end of its down stroke.

(19) Secure clevis pin (11) in place with two e-rings (10).

(20) Install L.H. stirrup housing (8) on seat weldment (9) and secure with two lockwashers (7), screws (6), and screw (5).

(21) Install tabs (A, Figure 4-5) of R.H. and L.H. outer shrouds (2) in slots (B) of column adapter weldment (3) and secure with four screws (1), making sure middle outer shroud assembly (4) is captured by R.H. and L.H. outer shrouds (2).

(22) Plug table power cord into outlet receptacle.

4.6 Tilt Capacitor Removal / Installation

A. Removal

NOTE
Steps 8 thru 10 describe the procedure for 115 VAC units. Use these steps as a guide for 230 VAC units; the steps are similar.

(1) Raise TABLE UP function all the way up.

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(2) Unplug table power cord from outlet receptacle.

(3) Remove four screws (1, Figure 4-8) and R.H. and L.H. outer shrouds (2) from column adapter weldment (3).

(4) Lower middle outer shroud assembly (4) down out of way.

(5) Remove two screws (5) and connection cover (6) from column adapter weldment (3).

(6) Cut cable tie (A) securing wire harnesses to capacitor mounting bracket (7).

(7) Using screwdriver, pry tab (B) of capacitor mounting bracket (7) outward; then remove tilt capacitor (8) from capacitor mounting bracket.

(8) Remove cap (9) from tilt capacitor (8).

DANGER
A capacitor contains stored electricity. Never touch terminals of a capacitor, even if power has been shut off or disconnected. Always discharge capacitor before touching capacitor terminals or wires. Failure to comply with these instruction could result in serious personal injury or death.

(9) Discharge tilt capacitor (8).

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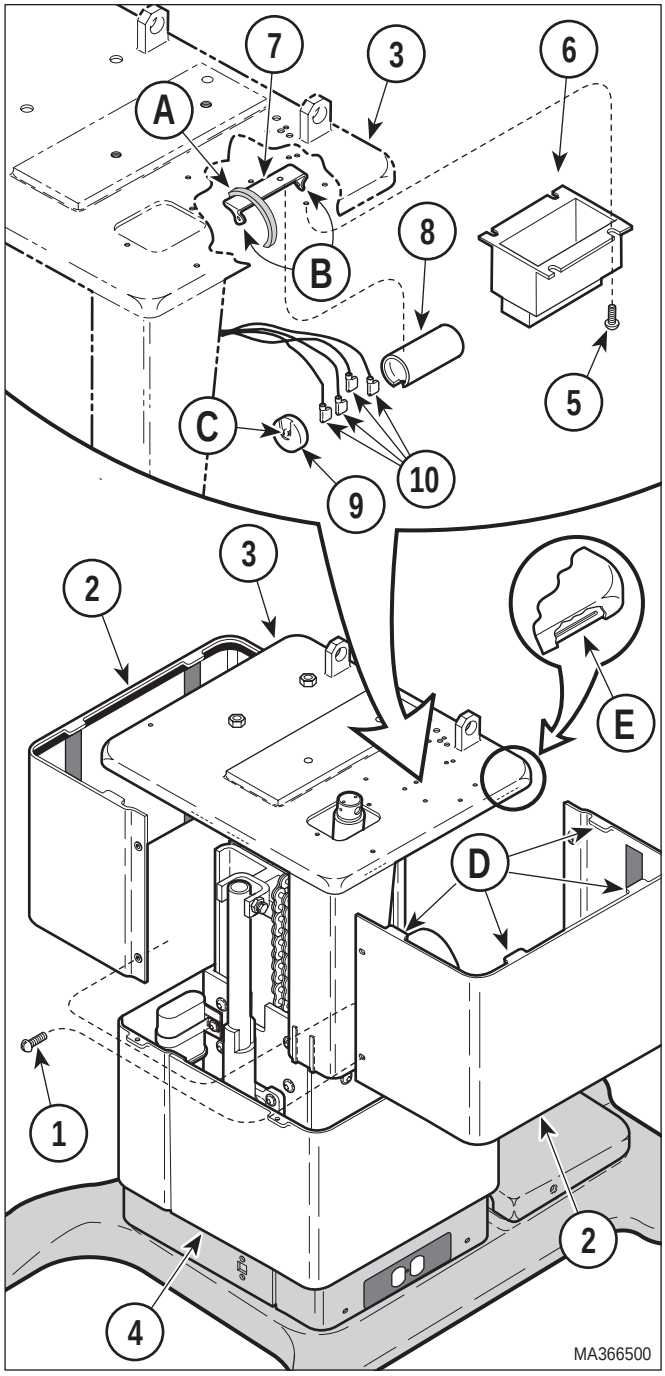

Figure 4-8. Tilt Capacitor Removal / Installation

(10) Tag and disconnect four wires (10) from terminals of tilt capacitor (8); then remove tilt capacitor.

B. Installation

(1) Connect four wires (10) to terminals of tilt capacitor (8).

(2) Install cap (9) on tilt capacitor (8).

(3) Position bottom of tilt capacitor (8) on capacitor mounting bracket (7) and then push the top of the capacitor inward. Using a screwdriver, force the tab (B) of the capacitor mounting bracket down over the catch (C) of cap (9). Make sure tilt capacitor is held firmly in place.

(4) Secure bundle of wire harnesses to capacitor mounting bracket (7) with a cable tie (A).

(5) Install connection cover (6) on column adapter weldment (3) and secure with two screws (5).

(6) Install tabs (D) of R.H. and L.H. outer shrouds (2) in slots (E) column adapter weldment (3) and secure with four screws (1), making sure middle outer shroud assembly (4) is captured by R.H. and L.H. outer shrouds (2).

(7) Plug table power cord into outlet receptacle.

4.7 Back Actuator Removal / Installation

A. Removal

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

NOTE
Steps 6 thru 9 describe the procedure for 115 VAC units. Use these steps as a guide for 230 VAC units; the steps are similar.

(1) Unplug table power cord from outlet receptacle.

(2) Remove upholstered back (1, Figure 4-9) from back board (2).

(3) Remove four screws (3), and back board (2) from back weldment (4).

(4) Remove two screws (5), lockwashers (6), and back actuator limit switch assembly (7) from back actuator (8).

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(5) Remove two screws (9) and back capacitor cover (10) from back weldment (4).

(6) Using screwdriver, pry tab (A) of capacitor mounting bracket (11) outward; then remove back capacitor (12) from capacitor mounting bracket.

(7) Remove cap (13) from back capacitor (12).

DANGER
A capacitor contains stored electricity. Never touch terminals of a capacitor, even if power has been shut off or disconnected. Always discharge capacitor before touching capacitor terminals or wires. Failure to comply with these instruction could result in serious personal injury or death.

(8) Discharge back capacitor (12).

(9) Tag and disconnect two actuator wires (14) from terminals of back capacitor (12).

(10) Disconnect actuator wire (15) from wire (16).

(11) Remove snap bushing (17) from back capacitor cover (10).

(12) Pull back actuator wires (B) thru snap bushing (17).

(13) While supporting back weldment (1, Figure 4-10), remove two e-rings (2) and clevis pin (3) which is securing back actuator (4) to seat weldment (5). Lower back weldment down.

(14) Remove two e-rings (6), clevis pin (7), and back actuator (4) from back weldment (1).

(15) If back actuator (4) is being replaced, measure and record Distance (A).

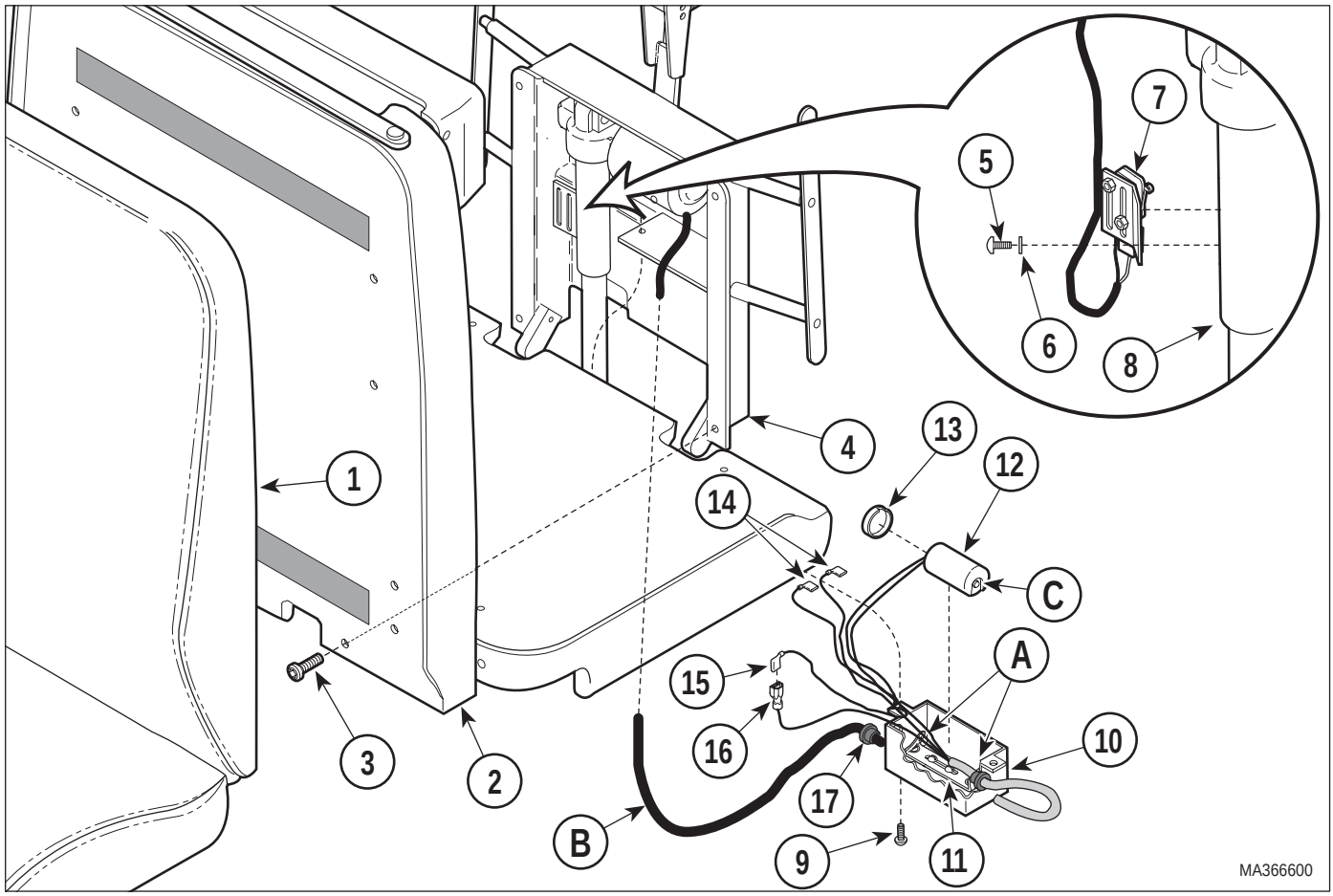

Figure 4-9. Back Actuator Wires Disconnection / Connection

B. Installation

CAUTION
Do not drill and install roll pin until later step.

(1) Screw or unscrew clevis (8, Figure 4-10) of new back actuator (4) until Distance (A) is set.

(2) Install back actuator (4) on back weldment (1) and secure with clevis pin (7) and two e-rings (6).

(3) Raise back weldment (1) into position; then temporarily connect back actuator (4) to seat weldment (5) with clevis pin (3).

(4) Pull back actuator wires (B) thru snap bushing (17, Figure 4-9).

(5) Install snap bushing (17) in back capacitor cover (10).

(6) Connect actuator wire (15) to wire (16).

(7) Connect two actuator wires (14) to terminals of back capacitor (12).

(8) Install cap (13) on back capacitor (12).

(9) Position bottom of back capacitor (12) on capacitor mounting bracket (11) and then push the top of the capacitor inward. Using a screwdriver, force the tab (A) of the capacitor mounting bracket down over the catch (C) of cap (13). Make sure back capacitor is held firmly in place.

(10) Install back capacitor cover (10) on back weldment (4) and secure with two screws (9).

(11) Install back actuator limit switch assembly (7) on back actuator (8) and secure with two lockwashers (6) and screws (5).

(12) Plug table power cord into outlet receptacle.

(13) Lower BACK DOWN function all the way down (until back actuator can be heard free wheeling).

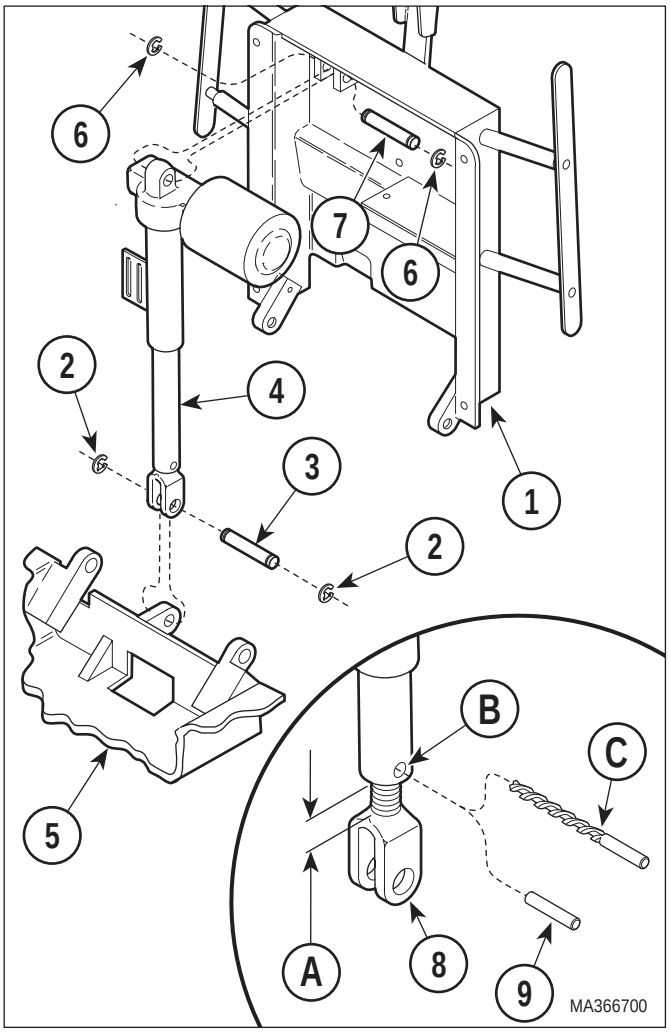

Figure 4-10. Back Actuator Removal / Installation

(14) Observe. Back weldment (1, Figure 4-10) should be parallel with seat weldment (5). If back weldment is parallel with seat weldment, go to step 19. If back weldment is not parallel with seat weldment, go to step 15.

(15) While supporting back weldment (1), remove clevis pin (3) securing clevis (8) to seat weldment (5).

(16) Screw clevis (8) inward or outward as determined necessary in step 14.

(17) Connect clevis (8) to seat weldment (5) with clevis pin (3).

(18) Repeat steps 13 thru 17 until back weldment (1) is parallel with seat weldment (5).

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(19) Install two e-rings (2) on clevis pin (3).

(20) Using pilot hole (B) as a guide, drill hole thru clevis (8) with 1/8 in. drill bit (C).

(21) Secure clevis (8) in position by installing roll pin (9) in pilot hole.

(22) Check adjustment of back actuator limit switch (Refer to para 4.9).

(23) Coat threads of four screws (3, Figure 4-9) with removable threadlocking adhesive (Loctite 242).

(24) Install back board (2) on back weldment (4) and secure with four screws (3).

(25) Install upholstered back (1) on back board (2).

4.8 Back Capacitor Removal / Installation

A. Removal

WARNING

Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

NOTE

Steps 5 thru 8 describe the procedure for 115 VAC units. Use these steps as a guide for 230 VAC units; the steps are similar.

(1) Unplug table power cord from outlet receptacle.

(2) Remove upholstered back (1, Figure 4-11) from back board (2).

(3) Remove four screws (3), and back board (2) from back weldment (4).

(4) Remove two screws (5) and back capacitor cover (6) from back weldment (4).

(5) Using a screwdriver, pry tab (A) of capacitor mounting bracket (7) outward; then remove back capacitor (8) from capacitor mounting bracket.

(6) Remove cap (9) from back capacitor (8).

DANGER

A capacitor contains stored electricity. Never touch terminals of a capacitor, even if power has been shut off or disconnected. Always discharge capacitor before touching capacitor terminals or wires. Failure to comply with these instruction could result in serious personal injury or death.

(7) Discharge back capacitor (8).

(8) Tag and disconnect four wires (10) from terminals of back capacitor (8).

B. Installation

(1) Connect four wires (10) to terminals of back capacitor (8).

(2) Install cap (9) on back capacitor (8).

(3) Position bottom of back capacitor (8) on capacitor mounting bracket (7) and then push the top of the capacitor inward. Using a screwdriver, force tab (A) of the capacitor mounting bracket down over the catch (B) of cap (9). Make sure back capacitor is held firmly in place.

(4) Install back capacitor cover (6) on back weldment (4) and secure with two screws (5).

(5) Coat threads of four screws (3) with removable threadlocking adhesive (Loctite 242).

(6) Install back board (2) on back weldment (4) and secure with four screws (3).

(7) Install upholstered back (1) on back board (2).

(8) Plug table power cord into outlet receptacle.

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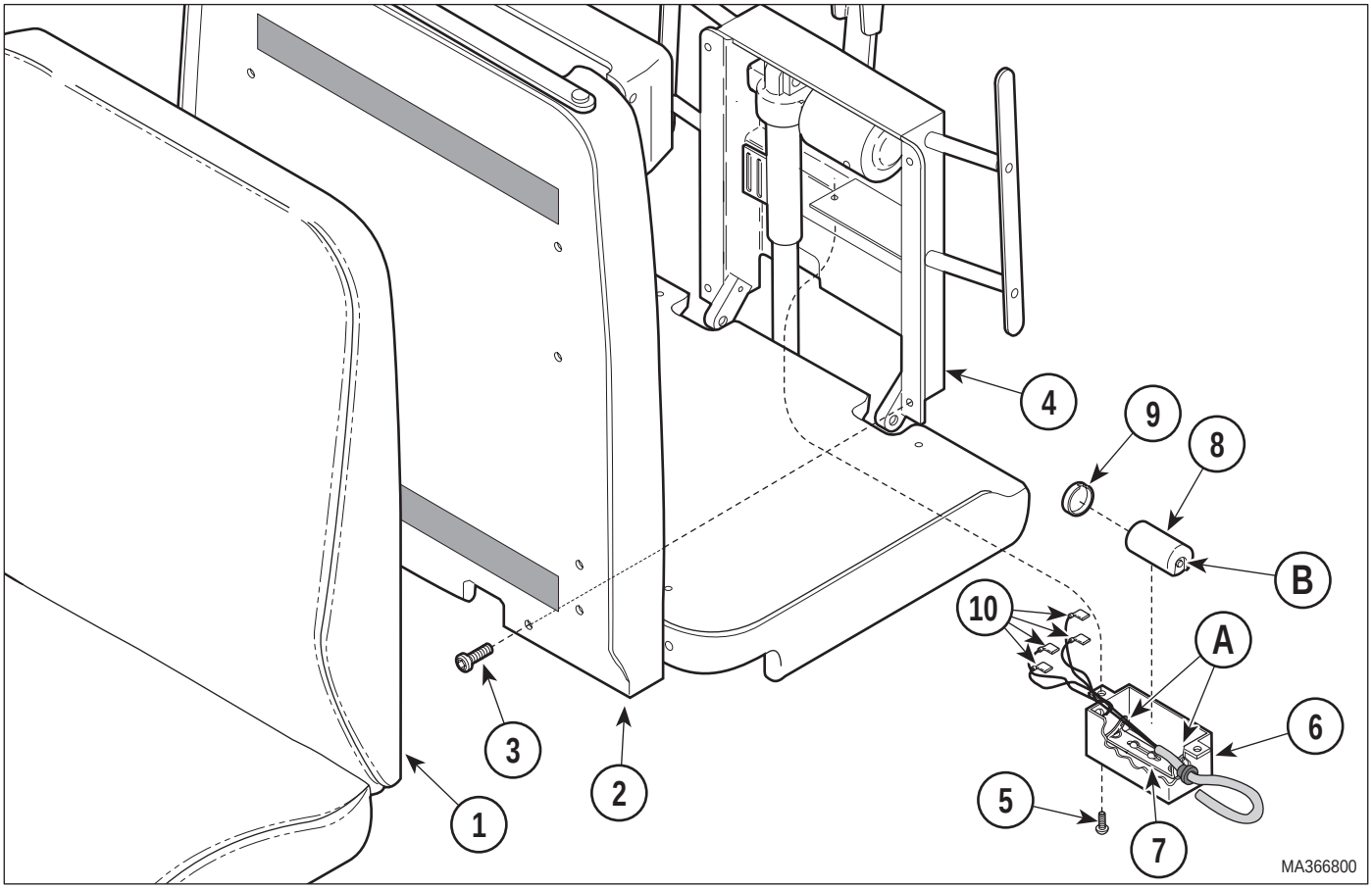

Figure 4-11. Back Capacitor Removal / Installation

4.9 Back Actuator Limit Switch Removal / Installation / Adjustment (Applies To Early Units Only)

A. Removal

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Unplug table power cord from outlet receptacle.

(2) Remove upholstered back (1, Figure 4-12) from back board (2).

(3) Remove four screws (3), and back board (2) from back weldment (4).

(4) Remove two screws (5), lockwashers (6), and partially separate limit switch bracket (7) from back actuator (8).

(5) Disconnect limit switch harness (9) from back actuator limit switch (10).

(6) Mark position of two screws (11) on limit switch bracket (7).

(7) Remove two nuts (12), two screws (11), and back actuator limit switch (10) from limit switch bracket (7).

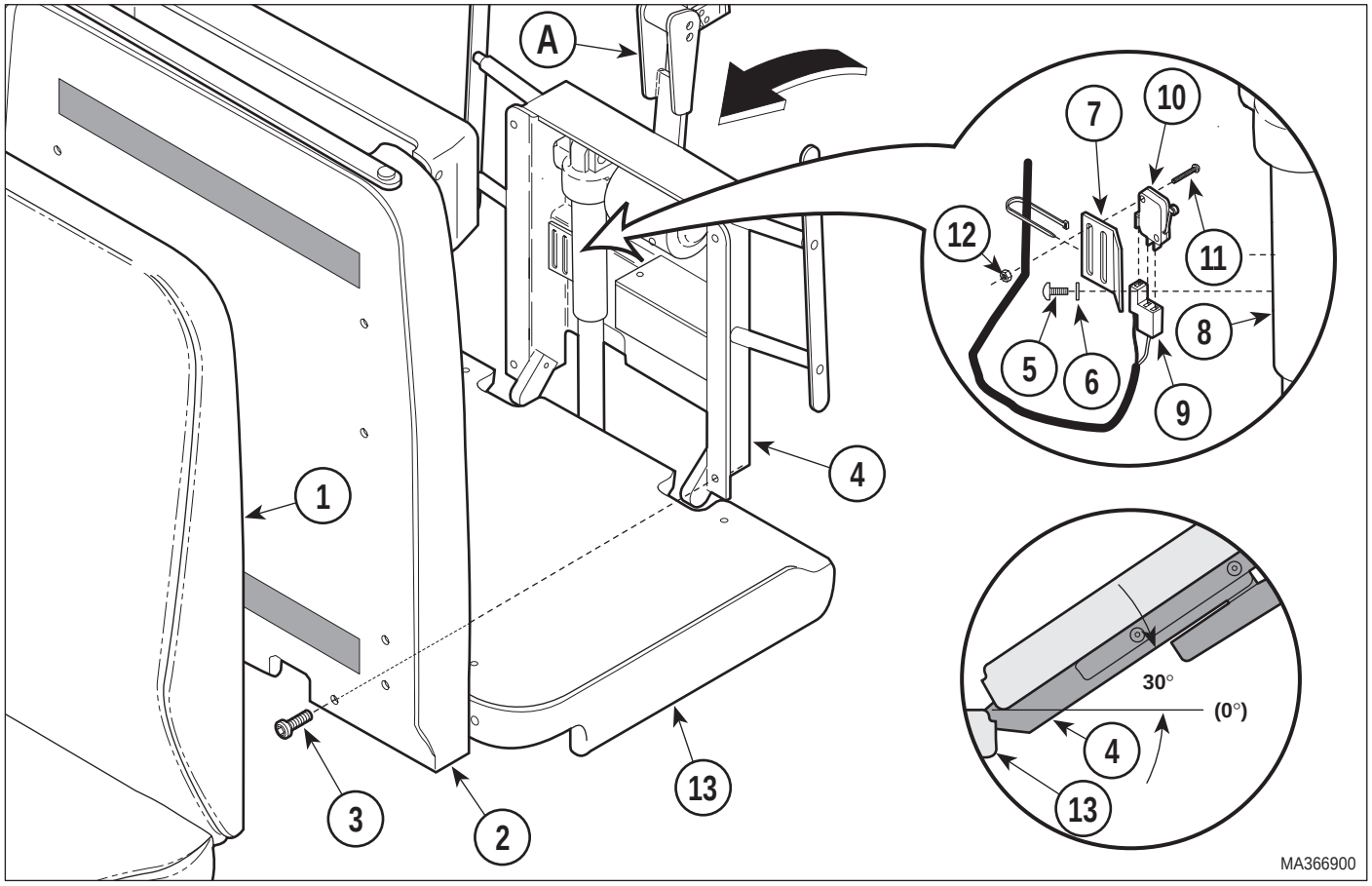

Figure 4-12. Back Actuator Limit Switch Removal / Installation / Adjustment

B. Installation

NOTE
Use the marks, made during removal, as a good starting point in the adjustment of the back actuator limit switch.

(1) Install back actuator limit switch (10) on limit switch bracket (7) and secure with two screws (11) and nuts (12), making sure screws (11) are aligned with marks made during removal of original limit switch.

(2) Connect limit switch wire harness (9) to back actuator limit switch (10).

(3) Install limit switch bracket (7) on back actuator (8) and secure with two lockwashers (6) and screws (5).

(4) Plug table power cord into outlet receptacle.

(5) Run TILT DOWN function all the way down until seat weldment (13) is level (± 1°).

NOTE
Perform steps 6 and 7 to determine the position (angle) of the back weldment when the back actuator limit switch is being tripped. This is necessary to determine if the limit switch needs to be adjusted.

Also, release headrest arm (so headlock limit switch will trip) after step or TABLE DOWN, BACK DOWN, AND TILT UP functions will not work.

(6) Run BACK UP function all the way up.

(7) While pushing in on headrest arm to untrip the headlock limit switch, run BACK DOWN function downward until it automatically stops (should be approximately 30° above horizontal).

EQUIPMENT ALERT
Seat weldment (13) should be level per step 5 before taking measurement of back weldment angle. Otherwise, incorrect reading will result.

(8) Using a protractor, measure and record angle of back weldment (4).

(9) If angle is not 30° ± 1°, go to step 10. If angle is 30° ± 1°, go to step 12.

NOTE
If back weldment stops at too high of an angle (above 31°), slide back actuator limit switch toward head end of table. If back weldment stops at too low of an angle (below 29°), slide back actuator limit switch toward foot end of table.

(10) Loosen two nuts (12) and slide back actuator limit switch (10) toward head end of table or foot end of table as determined necessary; then retighten two nuts (12).

(11) Repeat steps 6 thru 10 until back weldment angle is 30° ± 1° when headlock limit switch trips.

(12) Coat threads of four screws (3) with removable threadlocking adhesive (Loctite 242).

(13) Install back board (2) on back weldment (4) and secure with four screws (3).

(14) Install upholstered back (1) on back board (2).

4.10 Headlock Limit Switch Removal / Installation / Adjustment (Applies To Early Units Only)

A. Removal

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers / shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Unplug table power cord from outlet receptacle.

(2) Remove upholstered back (1, Figure 4-13) from back board (2).

(3) Remove four screws (3), and back board (2) from back weldment (4).

(4) Remove screw (5) securing limit switch assembly (6) to back weldment (4).

(5) Disconnect limit switch wire harness (7) from headlock limit switch (8).

(6) Remove two nuts (9), screws (10), and headlock limit switch (8) from switch bracket (11).

B. Installation

(1) Install headlock limit switch (8) on switch bracket (11) and secure with two screws (10) and nuts (9).

(2) Connect limit switch wire harness (7) to headlock limit switch (8).

(3) Position limit switch assembly (6) on back weldment (4), making sure trip arm (A) of headlock limit switch is covering setscrew (12); then secure with screw (5).

(4) Using a 1/8 in. Allen Wrench, remove setscrew (12) from headlock bar weldment (13).

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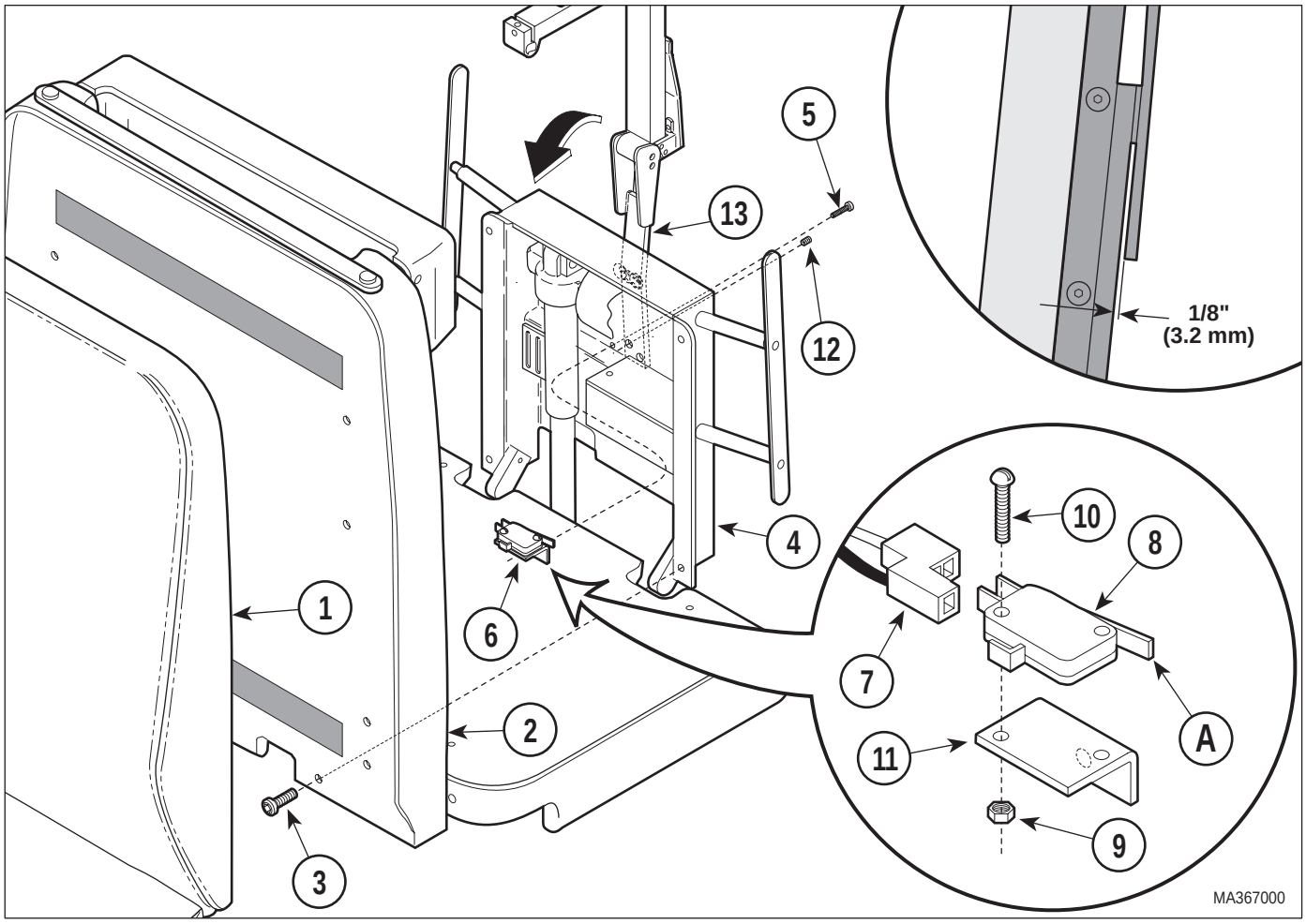

Figure 4-13. Headlock Limit Switch Removal / Installation / Adjustment

(5) Coat threads of setscrew (12) with permanent threadlocking adhesive (Loctite 262).

NOTE
If setscrew does not provide enough adjustment range to make proper adjustment, bend trip arm of headlock limit switch slightly to make rough adjustment, and then use setscrew to fine tune the adjustment.

(6) Using a 1/8 in. Allen Wrench, install setscrew (12) in headlock bar weldment (13). Adjust setscrew until headlock limit switch untrips when headlock bar weldment (13) is deflected any more than 1/8 in. (3.2 mm) from back weldment (4).

(7) Coat threads of four screws (3) with removable threadlocking adhesive (Loctite 242).

(8) Install back board (2) on back weldment (4) and secure with four screws (3).

(9) Install upholstered back (1) on back board (2).

(10) Plug table power cord into outlet receptacle.

(11) Check for proper functioning and adjustment of headlock limit switch; TABLE DOWN, BACK DOWN, and TILT UP function should not run when headlock arm weldment is deflected more than 1/8 in. (3.2 mm) and back section is below +30°.

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4.11 Foot Actuator Removal / Installation

A. Removal

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers / shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

NOTE
Steps 6 thru 9 of removal describe the procedure for 115 VAC units. Use these steps as a guide for 230 VAC units; the steps are similar.

(1) Unplug table power cord from outlet receptacle.

(2) Squeeze release latches (A, Figure 4-14) and remove foot board assembly (1) from foot extension weldment (2).

(3) Remove four screws (3) and front trim (4) from foot extension weldment (2).

(4) Remove two screws (5) and partially remove foot capacitor cover (6) from foot extension weldment (2).

(5) Disconnect wire (7) from foot actuator wire (8).

(6) Using screwdriver, pry tab (B) of capacitor mounting bracket (9) outward; then remove foot capacitor (10) from capacitor mounting bracket.

(7) Remove cap (11) from foot capacitor (10).

DANGER
A capacitor contains stored electricity. Never touch terminals of a capacitor, even if power has been shut off or disconnected. Always discharge capacitor before touching capacitor terminals or wires. Failure to comply with these instruction could result in serious personal injury or death.

(8) Discharge foot capacitor (10).

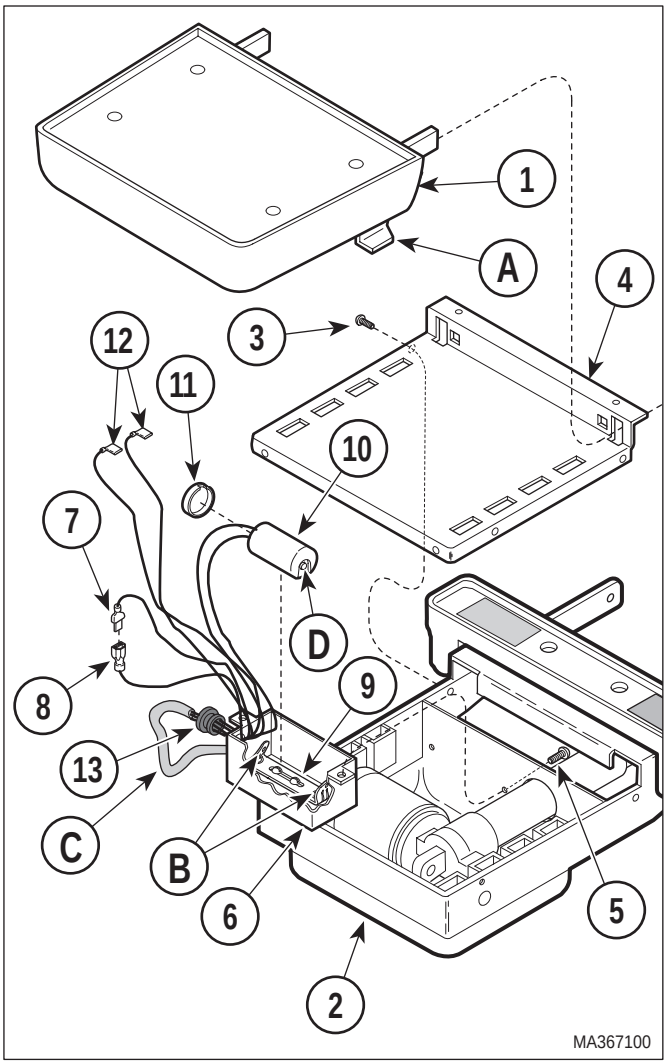

Figure 4-14. Foot Actuator Wires Disconnection / Connection

(9) Tag and disconnect two actuator wires (12) from terminals of foot capacitor (10).

(10) Remove snap bushing (13) from foot capacitor cover (6).

(11) Pull actuator wires (C) thru snap bushing (13).

(12) Remove hole plug (1, Figure 4-15) from foot extension weldment (2).

(13) Remove two e-rings (3) from clevis pin (4).

(14) Using a hammer and punch, drive clevis pin (4) from foot extension weldment (2).

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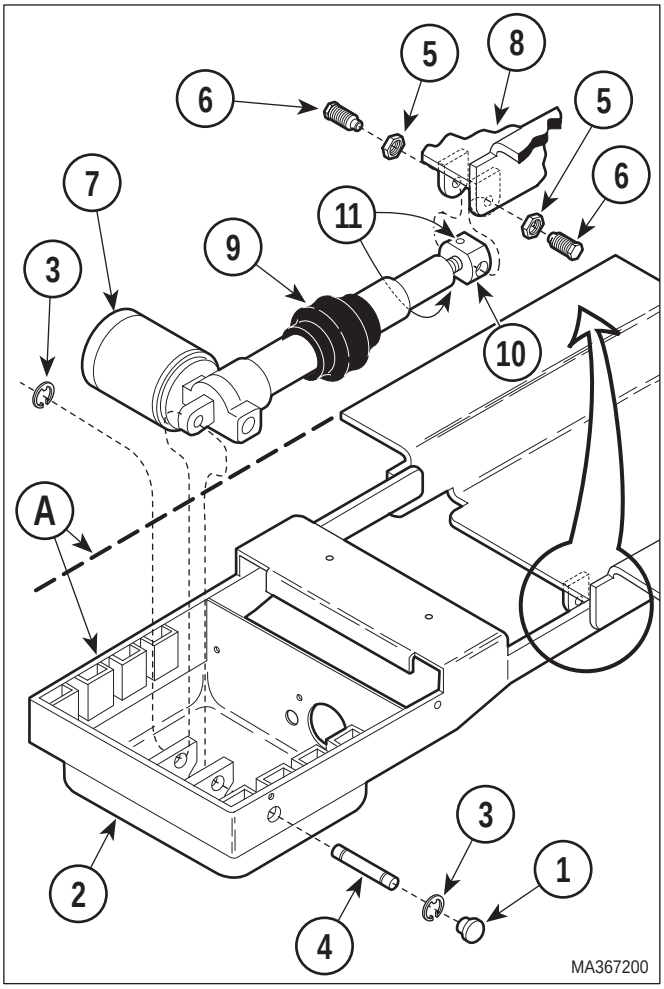

Figure 4-15. Foot Actuator Removal / Installation

(15) Loosen two jam nuts (5); then, while supporting foot extension weldment (2), remove two pivot screws (6) securing foot actuator (7) to seat weldment (8).

(16) Remove foot actuator (7) from foot extension weldment (2).

(17) Remove foot actuator bellows (9) from shaft of foot actuator (7).

B. Installation

(1) Install foot actuator bellows (9, Figure 4-15) on shaft of foot actuator (7).

(2) Screw adjustable end mount (10) on shaft of foot actuator (7). Tighten two setscrews (11).

(3) Position foot actuator (7) in foot extension weldment (2).

(4) Secure foot actuator (7) to foot extension weldment (2) with clevis pin (4) and two e-rings (3).

(5) Seat the foot actuator bellows (9) in foot extension weldment (2) properly.

(6) Install hole plug (1) in foot extension weldment (2).

(7) Pull actuator wires (C, Figure 4-14) thru snap

(8) Install snap bushing (13) in foot capacitor cover (6).

(9) Connect two actuator wires (12) to terminals of foot capacitor (10).

(10) Install cap (11) on foot capacitor (10).

(11) Position bottom of foot capacitor (10) on capacitor mounting bracket (9) and then push the top of the capacitor inward. Using a screwdriver, force the tab (B) of the capacitor mounting bracket down over the catch (D) of cap (11). Make sure back capacitor is held firmly in place.

(12) Connect foot actuator wire (8) to wire (7).

(13) Install foot capacitor cover (6) on foot extension weldment (2) and secure with two screws (5).

(14) Install front trim (4) on foot extension weldment (2) and secure with four screws (3).

(15) Install two jam nuts (5, Figure 4-15) on two pivot screws (6) fully.

(16) Connect foot actuator (7) to seat weldment (8) and secure with two pivot screws (6).

(17) Plug table power cord into outlet receptacle.

(18) Run FOOT UP function until the foot actuator (7) is fully extended (actuator can be heard free wheeling).

(19) Observe. If foot extension weldment (2) is level (A) with seat weldment (8), go to step 23. If foot extension weldment (2) is not level (A) with seat weldment (8), go to step 20.

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(20) While supporting foot extension weldment (2), remove two pivot screws (6).

(21) Loosen two setscrews (11); then screw adjustable end mount (10) in or out as determined necessary in step 19. Tighten two setscrews (11).

(22) Repeat steps 16 thru 21 until foot extension weldment (2) is level (A) with seat weldment (8).

(23) Tighten two pivot screws (6) until they bottom out; then back pivot screws off 1/8 to 1/4 turn.

(24) Secure two pivot screws (6) in position by tightening jam nuts (5). Tighten jam nuts (5) to 45 to 55 ft-lbs (61 to 74.5 kg).

(25) Install foot board weldment (1, Figure 4-14) on foot extension weldment (2), making sure foot board weldment is properly latched.

4.12 Foot Capacitor Removal / Installation

A. Removal

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers / shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

NOTE
Steps 5 thru 8 of removal describe the procedure for 115 VAC units. Use these steps as a guide for 230 VAC units; the steps are similar.

(1) Unplug table power cord from outlet receptacle.

(2) Squeeze release latches (A, Figure 4-16) and remove foot board assembly (1) from foot extension weldment (2).

(3) Remove four screws (3) and front trim (4) from foot extension weldment (2).

(4) Remove two screws (5) and partially remove foot capacitor cover (6) from foot extension weldment (2).

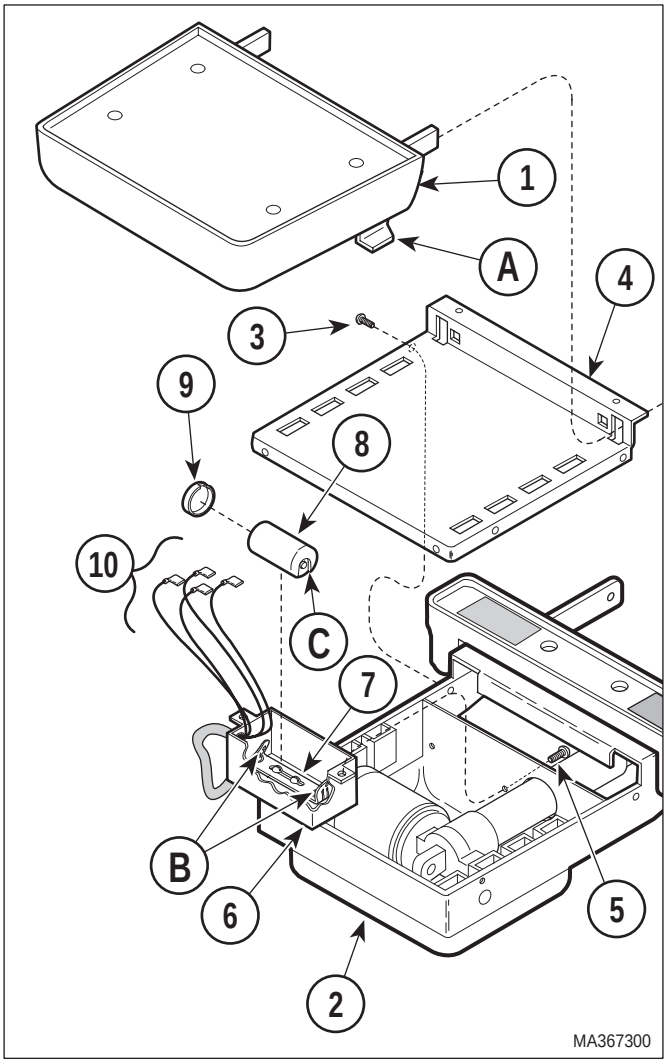

Figure 4-16. Foot Capacitor Removal / Installation

(5) Using screwdriver, pry tab (B) of capacitor mounting bracket (7) outward; then remove foot capacitor (8) from capacitor mounting bracket.

(6) Remove cap (9) from foot capacitor (8).

DANGER
A capacitor contains stored electricity. Never touch terminals of a capacitor, even if power has been shut off or disconnected. Always discharge capacitor before touching capacitor terminals or wires. Failure to comply with these instruction could result in serious personal injury or death.

(7) Discharge foot capacitor (8).

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(8) Tag and disconnect four wires (10) from terminals of foot capacitor (8). Remove foot capacitor from table.

B. Installation

(1) Connect four wires (10) to terminals of foot capacitor (8).

(2) Install cap (9) on foot capacitor (8).

(3) Position bottom of foot capacitor (8) on capacitor mounting bracket (7) and then push the top of the capacitor inward. Using a screwdriver, force the tab (B) of the capacitor mounting bracket down over the catch (C) of cap (9). Make sure foot capacitor is held firmly in place.

(4) Install foot capacitor cover (6) on foot extension weldment (2) and secure with two screws (5).

(5) Install front trim (4) on foot extension weldment (2) and secure with four screws (3).

(6) Install foot board weldment (1) on foot extension weldment (2), making sure foot board weldment is properly latched.

(7) Plug table power cord into outlet receptacle.

4.13 Base Actuator Removal / Installation

A. Removal

(1) Raise TABLE UP function all the way up.

(2) Run TILT, FOOT, and BACK functions to level table top.

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(3) Unplug table power cord from outlet receptacle.

(4) Remove four screws (1, Figure 4-17) and R.H. and L.H. outer shrouds (2) from column adapter weldment (3).

(5) Remove four screws (4) and R.H. and L.H. middle shrouds (5).

(6) Disconnect one modular cord (6) from each inlet PC board (7).

(7) Remove four screws (8), four screws (9), two screws (10), two receptacle label plates (11), and partially remove R.H. and L.H. inner shrouds (12) from base casting (13).

(8) Place supports (A) under back section (B) and foot section (C).

(9) Remove two screws (1, Figure 4-18) and PC board cover (2) from base casting (3).

(10) Remove screw (4) and cable strap (A) from base casting (3). Cut cable strap.

(11) Cut all cable ties (B) securing base actuator wires to other wires.

(12) Remove plastic wrapping (5) from around wires.

(13) Disconnect base wire harness (6) and brake wire harness (7) from PC control board (8).

(14) Loosen screw (9).

(15) Push base capacitor (10) out of capacitor strap (11).

DANGER
A capacitor contains stored electricity. Never touch terminals of a capacitor, even if power has been shut off or disconnected. Always discharge capacitor before touching capacitor terminals or wires. Failure to comply with these instruction could result in serious personal injury or death.

(16) Discharge base capacitor (10).

(17) Tag and disconnect two actuator wires (12) from terminals of base capacitor (10).

(18) On programmable tables only, remove screw (13) and cable bracket (14) from pivot screw (15).

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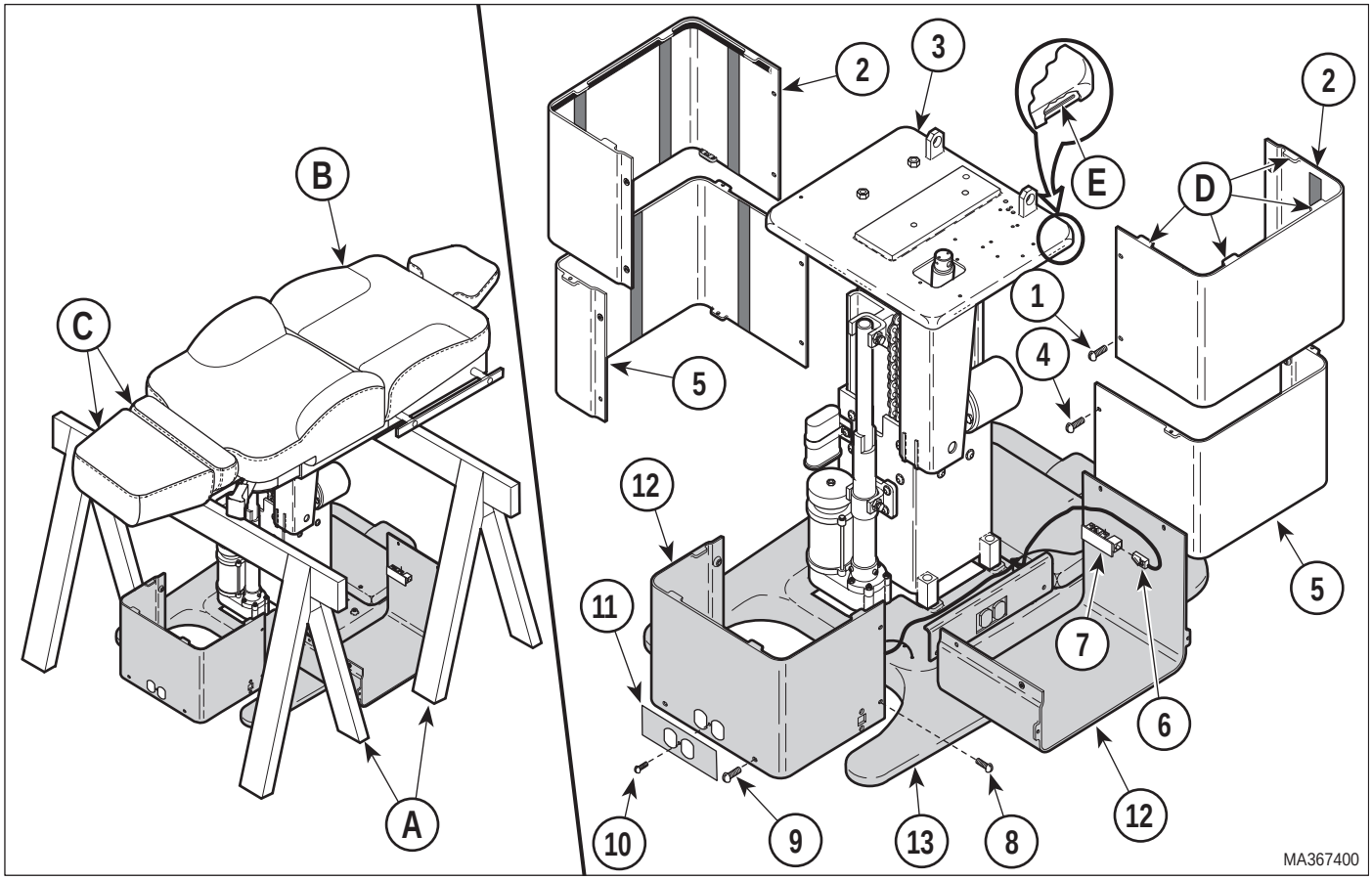

Figure 4-17. Base Shrouds Removal / Installation

(19) Loosen two jam nuts (16).

DANGER
Make sure table top is securely by supports to prevent it from falling once pivot screws are removed. Failure to do so could result in serious personal injury or death.

(20) Remove two pivot screws (17) securing base actuator (18) to column assembly (19).

(21) Loosen two jam nuts (20).

(22) Remove two pivot screws (15) and base actuator (18) from column assembly (19).

(23) Loosen three screws (21).

B. Installation

(1) Remove jam nuts (16 and 20, Figure 4-18) from pivot screws (15 and 17).

(2) Clean adhesive residue from threads of pivot screws (15 and 17).

(3) Screw jam nuts (16 and 20) on pivot screws (15 and 17) fully.

(4) Coat the threads of two pivot screws (17), which are located directly in front of jam nuts (16), with permanent threadlocking adhesive (Loctite 262).

NOTE
When installing pivot screws, adjust pivot screws until shaft (C) of base actuator (18) is centered in bracket.

(5) Install base actuator (18) on column assembly (19) and secure with two pivot screws (17). Tighten pivot screws to 50 to 60 in-lbs. (5.6 to 6.8 N•m).

(6) Tighten two jam nuts (16) to 45 - 55 ft-lbs. (61 to 74.6 N•m).

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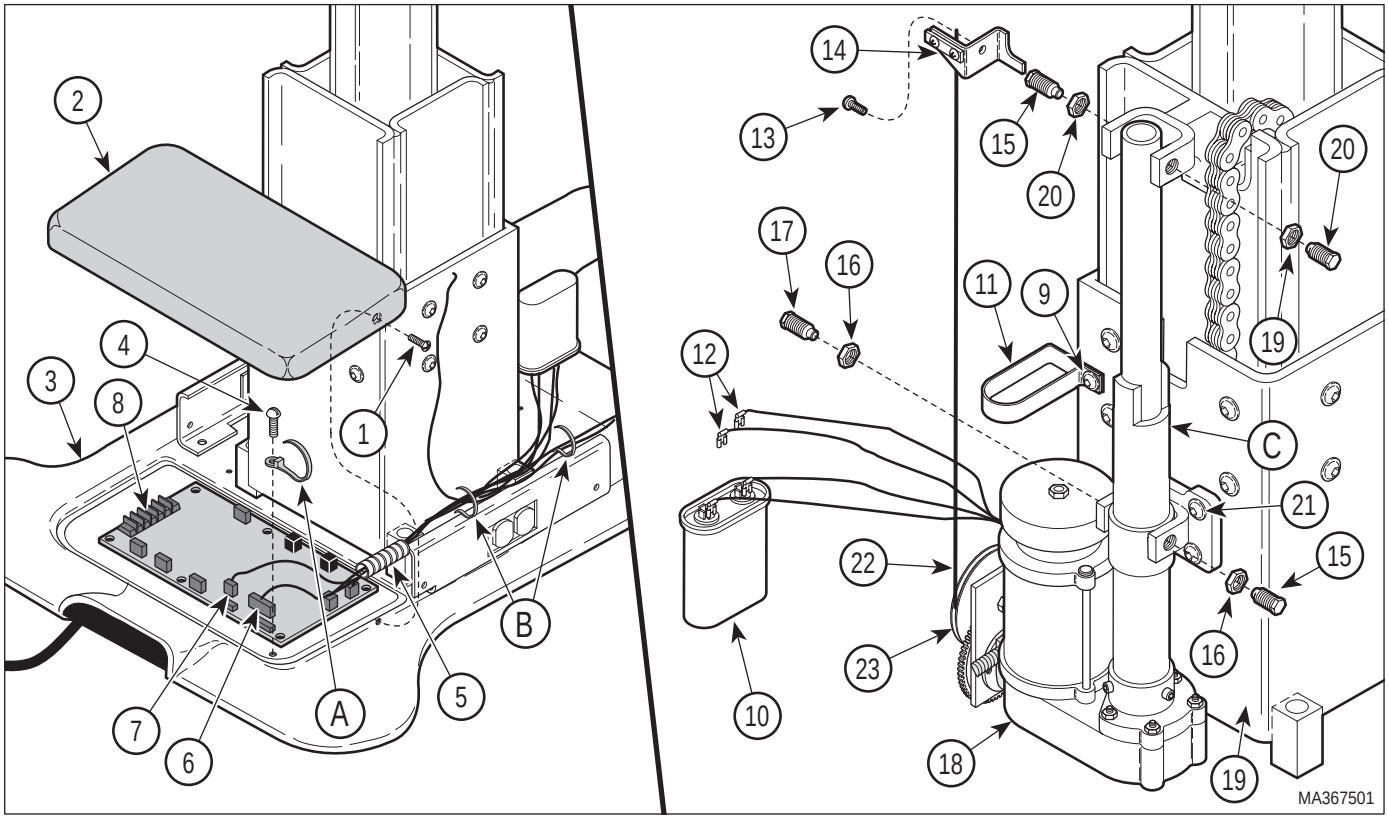

Figure 4-18. Base Actuator Removal / Installation

(7) Install plastic wrapping (5) around base actuator wires.

(8) Connect brake wire harness (7) and base wire harness (6) to PC control board (8).

(9) Connect two actuator wires (12) to terminals of base capacitor (10).

(10) Slide base capacitor (10) into capacitor strap (11) and secure by tightening screw (9).

(11) Secure wires together with cable strap (A). Secure cable strap to base casting (3) with screw (4).

(12) Secure wires together as a bundle with two or more cable ties (B).

(13) Install PC board cover (2) on base casting (3) and secure with two screws (1).

(14) Plug one modular cord (6, Figure 4-17) into each inlet PC board (7).

(15) Plug table power cord into outlet receptacle.

EQUIPMENT ALERT
On programmable tables, make sure cable bracket (14) is clear of the column assembly. Failure to do so could result in the cable bracket being damaged.

(16) Run TABLE UP and / or TABLE DOWN function until shaft (C, Figure 4-18) of base actuator (18) is aligned with bracket of column assembly (19).

(17) Coat threads of two pivot screws (15), which are directly in front of jam nuts (20), with permanent threadlocking adhesive (Loctite 262).

NOTE
When installing pivot screws, adjust pivot screws (15) until shaft (C) of base actuator (18) is centered in bracket.

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(18) Secure shaft (C) of base actuator (18) on column assembly (19) and secure with two pivot screws (15). Tighten pivot screws to 50 to 60 in-lbs. (5.6 to 6.8 N•m).

(19) Tighten two jam nuts (20) to 45 - 55 ft-lbs. (61 to 74.6 N•m).

(20) Tighten three screws (21) to 17 - 20 ft-lbs (23 - 27.1 N•m).

(21) On programmable tables, install cable bracket (14) on R.H. pivot screw (15) and secure with screw (13). Do not wrap cable (22) around pulley (23) at this time.

(22) Run TABLE UP function until table top is off of supports (A, Figure 4-17); then remove supports from under table top.

(23) Lower TABLE DOWN function all the way down.

NOTE
If necessary, the pulley (23, Figure 4-18) can be rotated back and forth up to 1/2 turn to assist in getting the cable (22) on the pulley.

(24) On programmable tables, wrap cable (22, Figure 4-18) around pulley (23) in direction shown in illustration until all cable slack is removed. Cable should be able to be wrapped around pulley 2-1/2 to 3 times.

(25) Connect modular cord (6, Figure 4-17) to inlet PC board (7).

(26) Install R.H. and L.H. inner shrouds (12) on base casting (13) and secure with two receptacle label plates (11), two screws (10), four screws (9), and four screws (8).

(27) Assemble R.H. and L.H. middle shrouds (5) around inner shrouds (12) with four screws (4).

(28) Install tabs (D) of R.H. and L.H. outer shrouds (2) in slots (E) of column adapter weldment (3) and secure with four screws (1), making sure middle outer shroud assembly (5) is captured by R.H. and L.H. outer shrouds (2).

(29) On programmable tables, calibrate the PC control board (Refer to para 4.2).

4.14 Base Capacitor Removal / Installation

A. Removal

(1) Raise TABLE UP function all the way up.

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(2) Unplug table power cord from outlet receptacle.

(3) Remove four screws (1, Figure 4-19) and R.H. and L.H. outer shrouds (2) from column adapter weldment (3).

(4) Remove four screws (4) and R.H. and L.H. middle shrouds (5).

(5) Disconnect two modular cords (6) from inlet PC boards (7).

(6) Remove four screws (8), four screws (9), two screws (10), two receptacle label plates (11), and partially remove R.H. and L.H. inner shrouds (12) from base casting (13).

(7) Loosen screw (14).

(8) Push base capacitor (15) out of capacitor strap (16).

DANGER
A capacitor contains stored electricity. Never touch terminals of a capacitor, even if power has been shut off or disconnected. Always discharge capacitor before touching capacitor terminals or wires. Failure to comply with these instruction could result in serious personal injury or death.

(9) Discharge base capacitor (15).

(10) Tag and disconnect four wires (17) from terminals of base capacitor (15).

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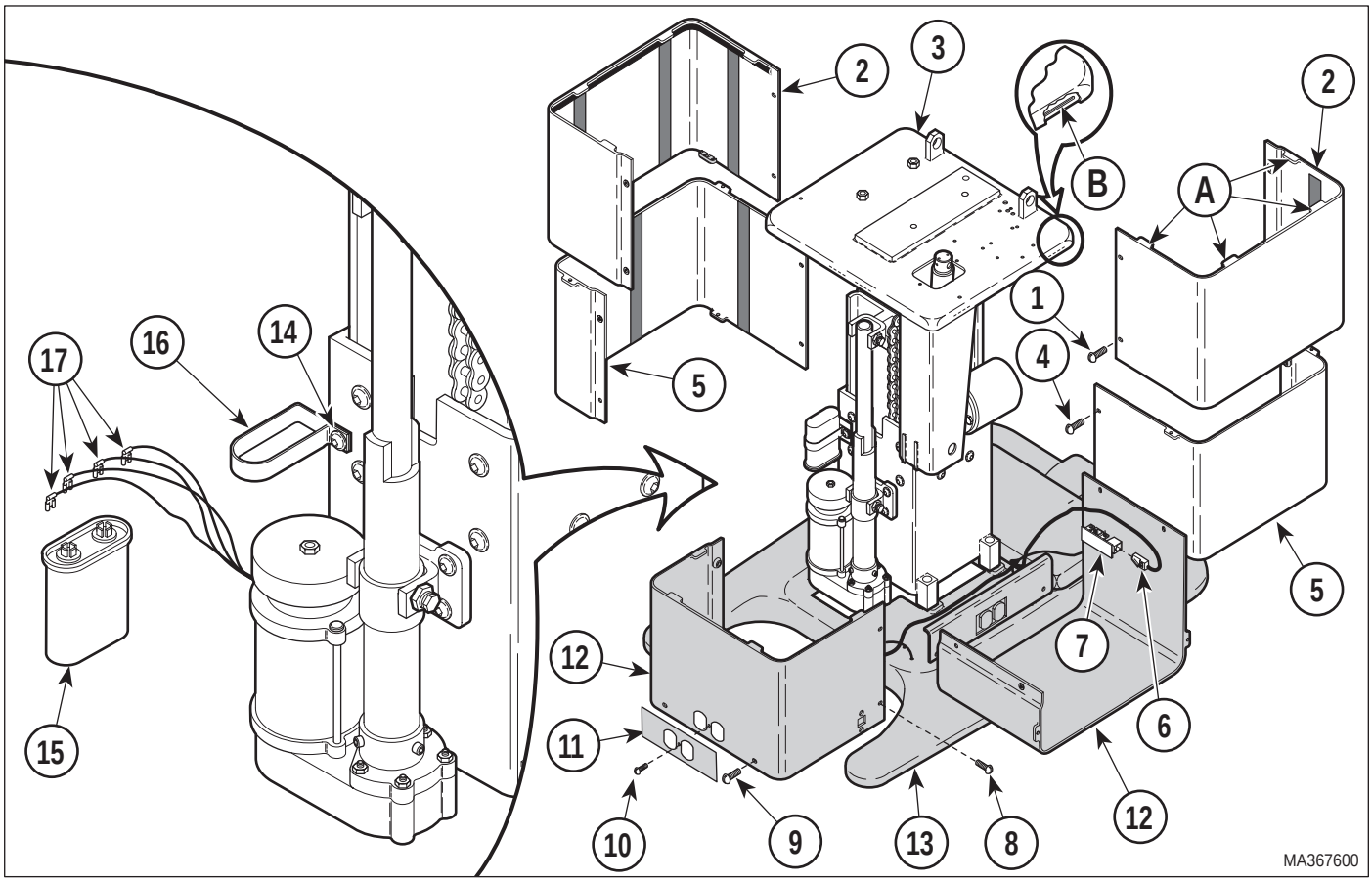

Figure 4-19. Base Capacitor Removal / Installation

B. Installation

(1) Connect four wires (17) to terminals of base capacitor (15).

(2) Slide base capacitor (15) into capacitor strap (16) and secure by tightening screw (14).

(3) Connect modular cords (6) to inlet PC boards (7).

(4) Install R.H. and L.H. inner shrouds (12) on base casting (13) and secure with two receptacle label plates (11), two screws (10), four screws (9), and four screws (8).

(5) Assemble R.H. and L.H. middle shrouds (5) around inner shrouds (12) with four screws (4).

(6) Install tabs (A) of R.H. and L.H. outer shrouds (2) in slots (B) of column adapter weldment (3) and secure with four screws (1), making sure middle outer shroud assembly (5) is captured by R.H. and L.H. outer shrouds (2).

4.15 Column Assembly Removal / Installation

A. Removal

(1) Raise TABLE UP function all the way up.

(2) Run TILT, FOOT, and BACK functions to level table top.

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(3) Unplug table power cord from outlet receptacle.

(4) Remove four screws (1, Figure 4-20) and R.H. and L.H. outer shrouds (2) from column adapter weldment (3).

(5) Remove four screws (4) and R.H. and L.H. middle shrouds (5).

(6) Disconnect one modular cord (6) from each inlet PC board (7).

(7) Remove four screws (8), four screws (9), two screws (10), two receptacle label plates (11), and partially remove R.H. and L.H. inner shrouds (12) from base casting (13).

(8) Place supports (A) under back section (B) and foot section (C).

NOTE
Steps 9 thru 12 apply only to programmable tables.

(9) Remove screw (1, Figure 4-21) and cable bracket (2) from R.H. pivot screw (3).

(10) Cut cable tie (A) securing base sensor harness (4) to capacitor strap (5).

(11) Disconnect base sensor harness (4) from harness (6).

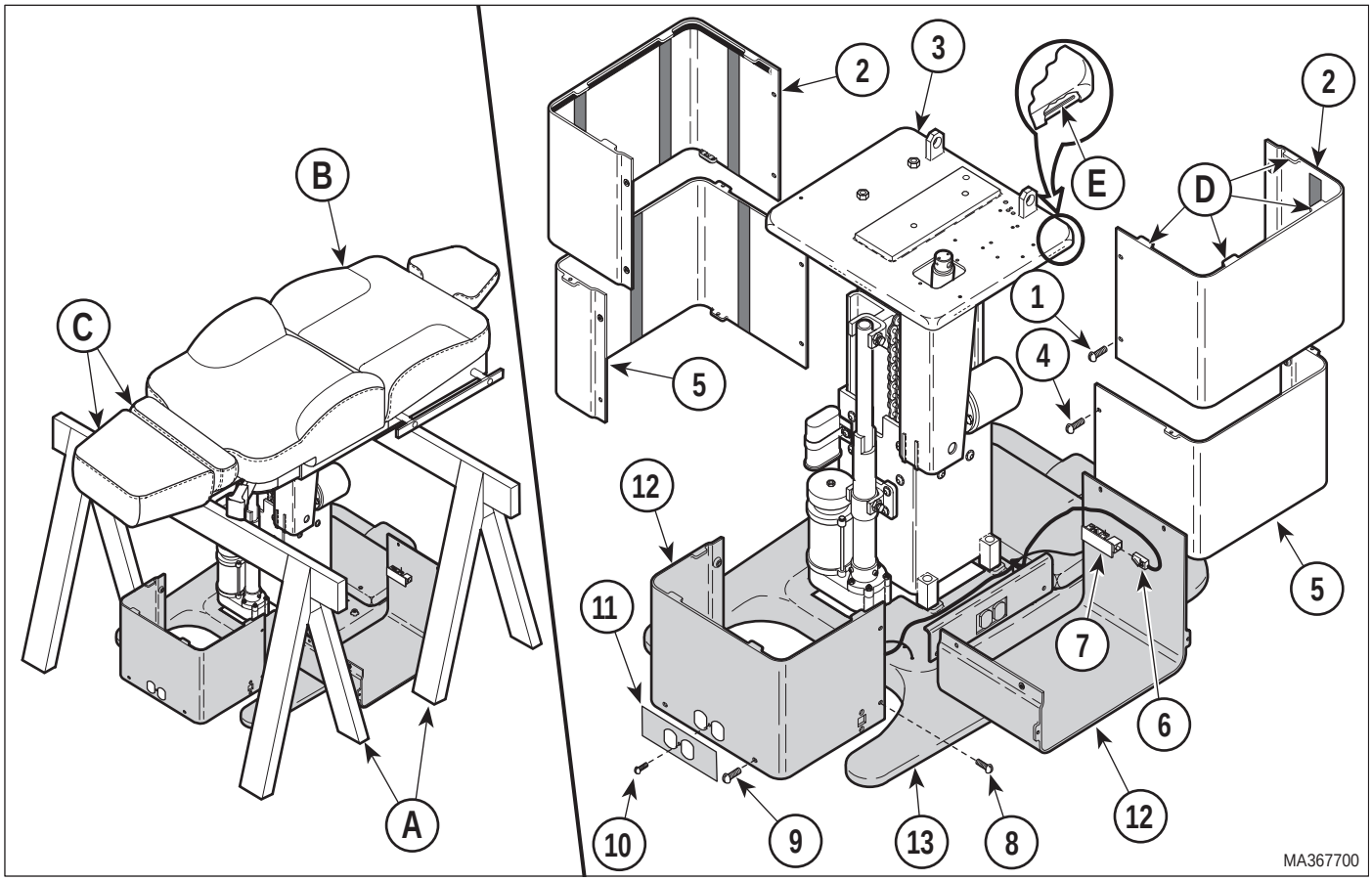

Figure 4-20. Base Shrouds Removal / Installation

(12) Remove two screws (7) and base reducer assembly (8) from column weldment assembly (9).

(13) Remove screw (1, Figure 4-22), capacitor strap (2), and base capacitor (3) from column assembly (4). Allow base capacitor to lay off on side.

DANGER

A capacitor contains stored electricity. Never touch terminals of a capacitor, even if power has been shut off or disconnected. Always discharge capacitor before touching capacitor terminals or wires. Failure to comply with these instruction could result in serious personal injury or death.

(14) Discharge base capacitor (3).

(15) Loosen two jam nuts (5).

DANGER

Make sure table top is securely supported by supports to prevent it from falling once pivot screws are removed. Failure to do so could result in serious personal injury or death.

(16) Remove two pivot screws (6) securing base actuator (7) to column assembly (4).

(17) Loosen two jam nuts (8).

(18) Remove two pivot screws (9) and partially remove base actuator (7) from column assembly (4). Allow base actuator to lay off on side.

(19) Loosen three screws (10).

(20) Remove two screws (1, Figure 4-23), lockwashers (2), and base up limit switch assembly (3) from column assembly (4).

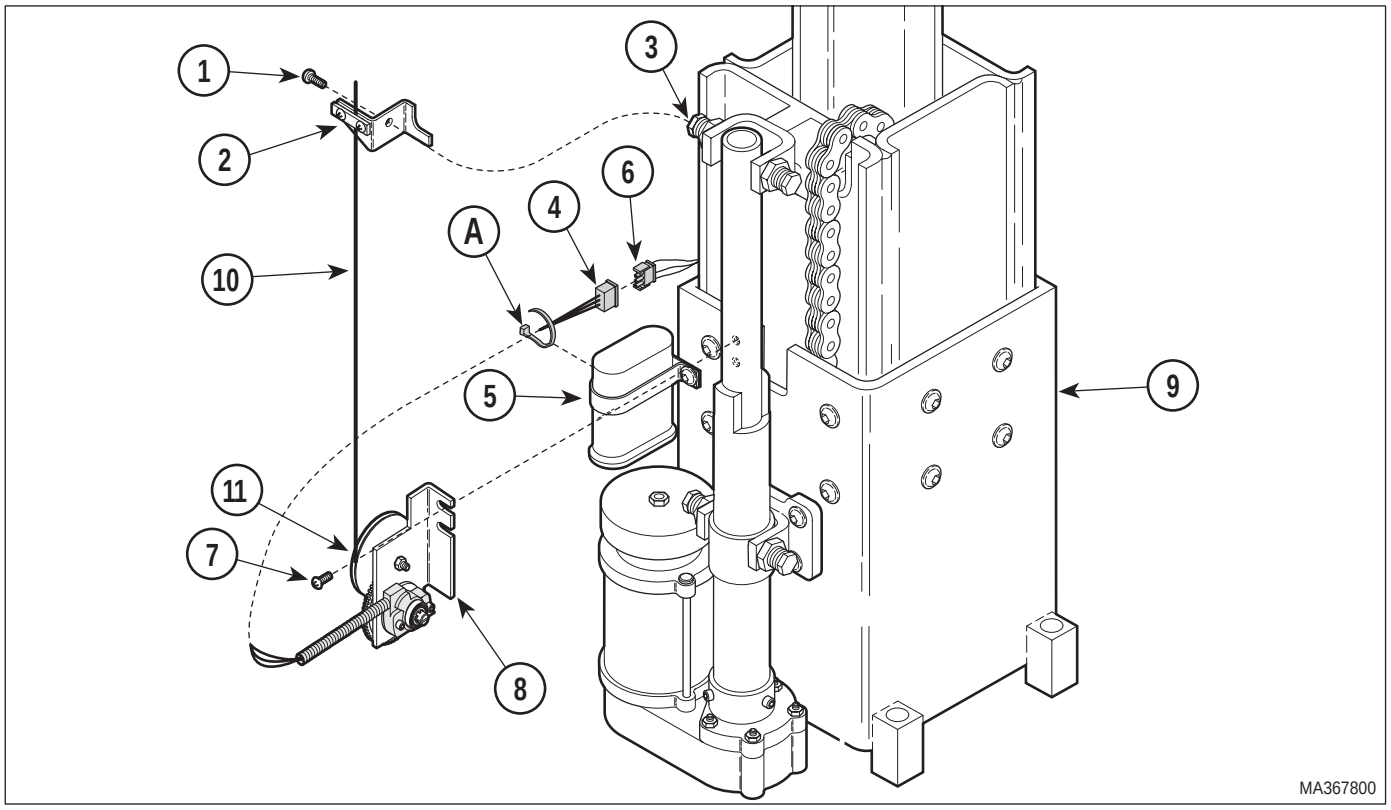

Figure 4-21. Base Reducer Components Removal / Installation

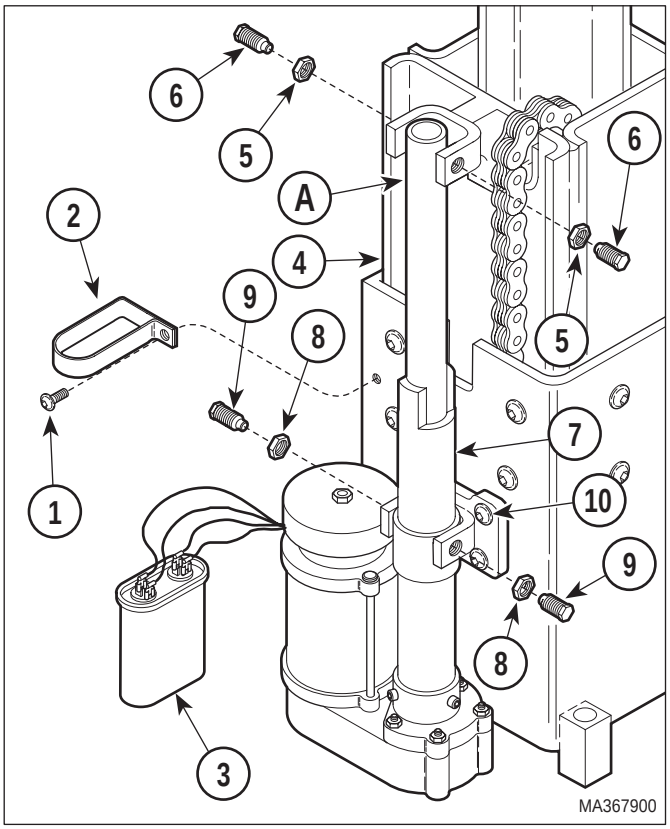

Figure 4-22. Base Actuator Removal / Installation

(21) Remove two screws (5), lockwashers (6), and base down limit switch assembly (7) from column assembly (4).

(22) Remove two locknuts (8) and four screws (9) which secures column assembly (4) to column adapter weldment (10).

(23) Remove four screws (11) and washers (12) securing column assembly (4) to base weldment (13).

(24) Remove column assembly (4) from base weldment (13).

B. Installation

(1) Position column assembly (4, Figure 4-23) in base weldment (13) and secure with four washers (12) and screws (11). Tighten four screws (11) to 50 to 60 ft-lbs (67.8 to 81.4 N•m).

(2) Remove jam nuts (5 and 8, Figure 4-22) from pivot screws (6 and 9).

(3) Clean adhesive residue from threads of pivot screws (6 and 9).

(4) Screw jam nuts (5 and 8) on pivot screws (6 and 9) fully.

(5) Coat the threads of two pivot screws (9), which are located directly in front of jam nuts (8), with permanent threadlocking adhesive (Loctite 262).

NOTE
When installing pivot screws, adjust pivot screws until shaft (A) of base actuator is centered in bracket.

(6) Install base actuator (7) on column assembly (4) and secure with two pivot screws (9). Tighten pivot screws to 50 to 60 in-lbs (5.6 to 6.8 N•m).

(7) Tighten two jam nuts (8) to 45 to 55 ft-lbs. (61 to 74.6 N•m).

(8) Install base capacitor (3) and capacitor strap (2) on column assembly (4) and secure with screw (1).

(9) Plug table power cord into outlet receptacle.

(10) Plug modular cord (6, Figure 4-20) into port of inlet PC board (7).

EQUIPMENT ALERT
Watch all disconnected components when moving the column in the following step. Failure to do so could result in damage due to crushing or pulling.

(11) Run TABLE UP and / or TABLE DOWN function until shaft (A) of base actuator (7, Figure 4-22) is aligned with bracket of column assembly (4).

(12) Coat the threads of two pivot screws (6), which are located directly in front of jam nuts (5), with permanent threadlocking adhesive (Loctite 262).

NOTE
When installing pivot screws, adjust pivot screws until shaft (A) of base actuator is centered in bracket.

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(13) Secure shaft (A) of base actuator (7) to column assembly (4) and secure with two pivot screws (6). Tighten pivot screws to 50 to 60 in-lbs. (5.6 to 6.8 N•m).

(14) Tighten two jam nuts (5) to 45 to 55 ft-lbs. (61 to 74.6 N•m).

(15) Tighten three screws (10) to 17 - 20 ft-lbs (23 - 27.1 N•m).

(16) Run TABLE UP function to align column assembly (4, Figure 4-23) with column adapter weldment (10).

(17) Secure column assembly (4) to column adapter weldment (10) with four screws (9) and two locknuts (8). Tighten screws (9) to 50 - 60 ft-lbs. (67.5 - 81.0 N•m).

(18) Run TABLE UP function up slightly, and remove supports (A, Figure 4-20) from under table top.

(19) Install base down limit switch assembly (7, figure 4-23) on column assembly (4) and secure with two lockwashers (6) and screws (5).

(20) Adjust base down limit switch (Refer to para 4.17).

(21) Install base up limit switch assembly (3) on column assembly (4) and secure with two lockwashers (2) and screws (1).

(22) Adjust base up limit switch (Refer to para 4.18).

NOTE
Steps 23 thru 28 apply only to programmable tables.

(23) Install base reducer assembly (8, Figure 4-21) on column weldment assembly (9) and secure with two screws (7).

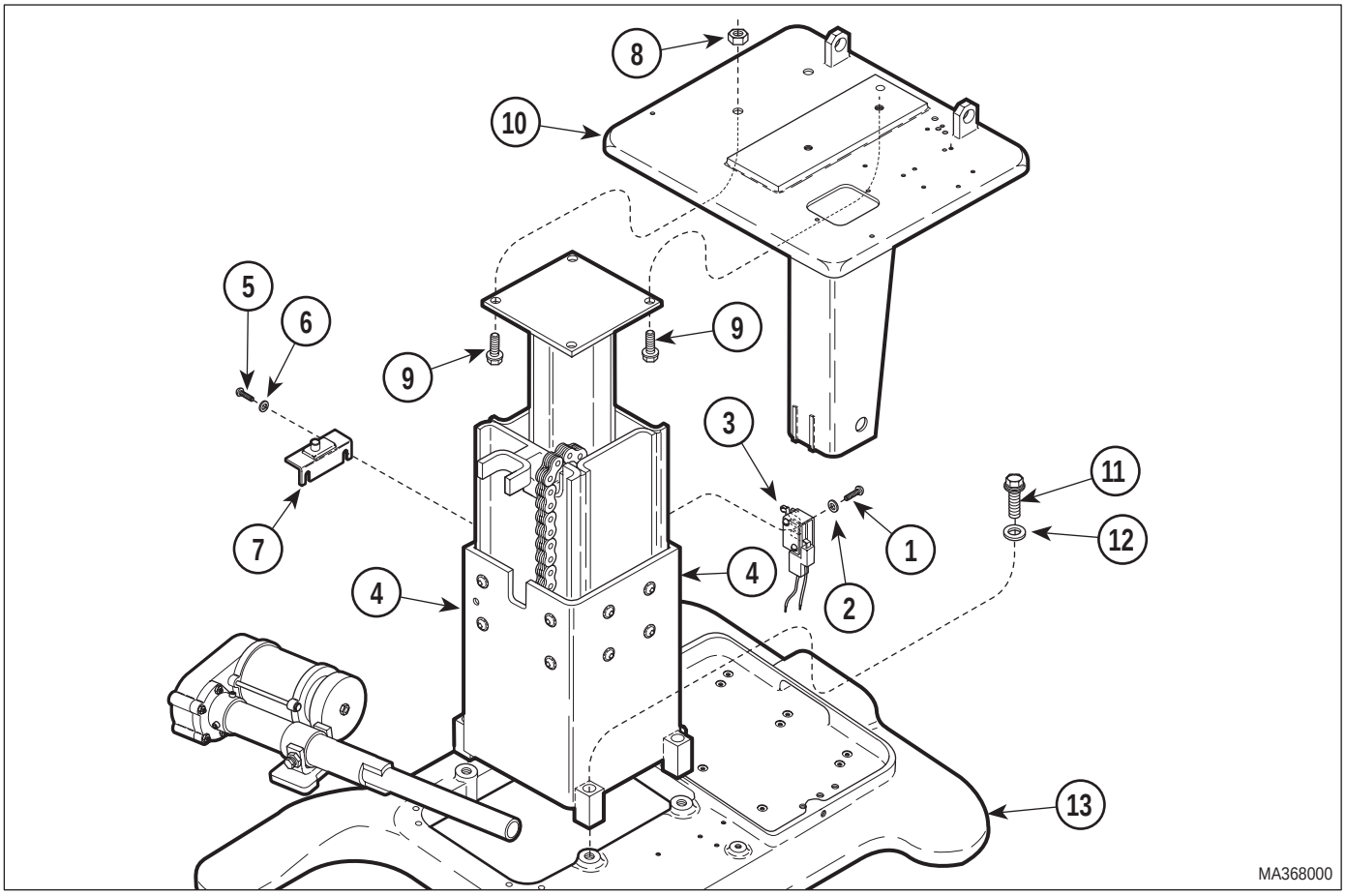

Figure 4-23. Column Assembly Removal / Installation

(24) Connect base sensor harness (4) to harness (6).

(25) Secure base sensor harness (4) to capacitor strap (5) with a cable tie (A).

(26) Install cable bracket (2) on R.H. pivot screw (3) and secure with screw (1). Do not wrap cable (10) around pulley (11) at this time.

(27) Run TABLE DOWN function all the way down.

NOTE
If necessary, the pulley (11) can be rotated back and forth up to 1/2 turn to assist in getting the cable (10) on the pulley.

(28) Wrap cable (10) around pulley (11) in direction shown in illustration until all cable slack is removed. Cable should be able to be wrapped around pulley 2-1/2 to 3 times.

(29) Connect one modular cord (6, Figure 4-20) to each inlet PC board (7).

(30) Install R.H. and L.H. inner shrouds (12) on base casting (13) and secure with two receptacle label plates (11), two screws (10), four screws (9), and four screws (8).

(31) Assemble R.H. and L.H. middle shrouds (5) around inner shrouds (12) with four screws (4).

(32) Install tabs (D) of R.H. and L.H. outer shrouds (2) in slots (E) of column adapter weldment (3) and secure with four screws (1), making sure middle outer shroud assembly (5) is captured by R.H. and L.H. outer shrouds (2).

(33) On programmable tables, adjust the base position sensor (Refer to para 4.36).

(34) On programmable tables, calibrate the PC control board (Refer to para 4.2).

4.16 Typical Actuator Motor / Actuator Brake Removal / Installation (Applies To All Actuators, Except Base Actuator)

A. Removal

(1) Remove malfunctioning actuator assembly:
Tilt actuator assembly (Refer to para 4.5).
Back actuator assembly (Refer to para 4.7).
Foot actuator assembly (Refer to para 4.11).

(2) Remove two nuts (1, Figure 4-24) and actuator motor (2) from actuator mechanism (3).

(3) Remove two shoulder washers (4) from actuator mechanism (3).

(4) Remove spacer (5) and motor coupler (6) from shaft of actuator motor (2).

NOTE
A needle nose pliers should be used to extract the actuator brake from the actuator mechanism. Grasp the raised round plate of the actuator brake with the pliers and pull.

(5) Remove actuator brake (7) and rubber damper (8) from shaft of actuator mechanism (3).

B. Installation

NOTE
The rubber damper must be installed so its flat side faces the inside of the actuator mechanism. The actuator brake must be installed so its flattest side faces outward. The shaft of the actuator mechanism may be turned with a screwdriver to help align the keys (A) of the actuator mechanism shaft with the key slots (B) in actuator brake.

(1) Install rubber damper (8), actuator brake (7), and spacer (5) in actuator mechanism (3).

(2) Install motor coupler (6) on shaft of actuator motor (2).

(3) Install two shoulder washers (4) in actuator mechanism (3).

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(4) Align keys (A) of actuator mechanism (3) shaft with key slots (B) of motor coupler (6) and then install actuator motor (2) on actuator mechanism (3) and secure with two nuts (1).

(5) Install actuator assembly:
Tilt actuator assembly (Refer to para 4.5).
Back actuator assembly (Refer to para 4.7).
Foot actuator assembly (Refer to para 4.11).

(6) Check actuator assembly for proper operation. The actuator assembly should run normally and should not make a grinding noise. A grinding noise indicates that key slots (B) of motor coupler (6) were not aligned properly with keys (A) of actuator mechanism (3) (a grinding noise also indicates that the motor coupler is being damaged). The actuator assembly should brake properly.

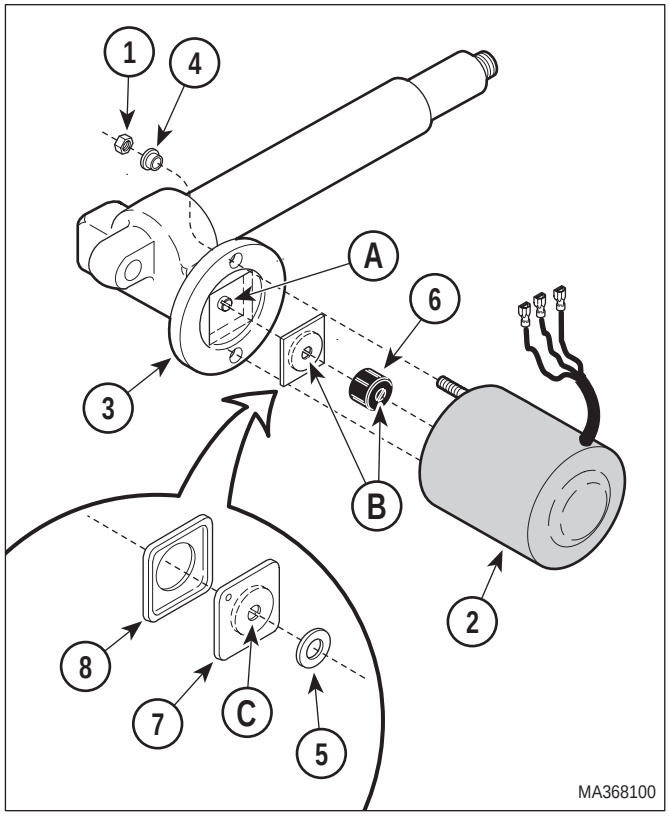

Figure 4-24. Actuator Motor / Actuator Brake Removal / Installation

4.17 Base Down Limit Switch Removal / Installation / Adjustment

A. Removal

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Unplug table power cord from outlet receptacle.

(2) Remove four screws (1, Figure 4-25) and R.H. and L.H. outer shrouds (2) from column adapter weldment (3).

(3) Remove four screws (4) and R.H. and L.H. middle shrouds (5).

(4) Remove two screws (6), washers (7), and partially remove switch bracket (8) from column weldment (9).

(5) Tag and disconnect two wires (10) from terminals of base down limit switch (11).

(6) While simultaneously pressing on two locking tabs (A) of base down limit switch (11), push switch out of switch bracket (8)

B. Installation

(1) Push base down limit switch (11) into switch bracket (8) until switch "snaps" into place.

(2) Connect two wires (10) to terminals of base down limit switch (11).

(3) Install switch bracket (8) on column weldment (9) and secure with two washers (7) and screws (6).

(4) Plug table power cord into outlet receptacle.

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(5) Run TABLE DOWN function all the way down (until base down limit switch is tripped and stops the table).

EQUIPMENT ALERT
At its lowest height, Distance B should be 12.55 to 12.61 in. (31.9 to 32.0 cm). Damage will occur to base actuator (C) if Distance B is less than 12.55 (31.9 cm). The base actuator (C) does not free wheel. Running the base actuator to its limit will damage the base actuator.

(6) Measure Distance B on base actuator.

(7) If Distance B is between 12.55 to 12.61 in. (31.9 to 32.0 cm), go to step 11.
If Distance B is not between 12.55 to 12.61 in. (31.9 to 32.0 cm), go to step 8.

(8) Raise TABLE UP function until access to base down limit switch (11) is possible.

NOTE
Moving base down limit switch upward will lessen Distance B. Moving base down limit switch downward will increase Distance B.

(9) Loosen two screws (6); then adjust switch bracket (8) up or down as determined necessary in step 7. Tighten two screws (6).

(10) Repeat steps 5 thru 9 until Distance B is between 12.55 to 12.61 in. (31.9 to 32.0 cm). when base actuator is fully retracted (stopped by base down limit switch).

(11) Assemble R.H. and L.H. middle shrouds (5) around inner shrouds (12) with four screws (4).

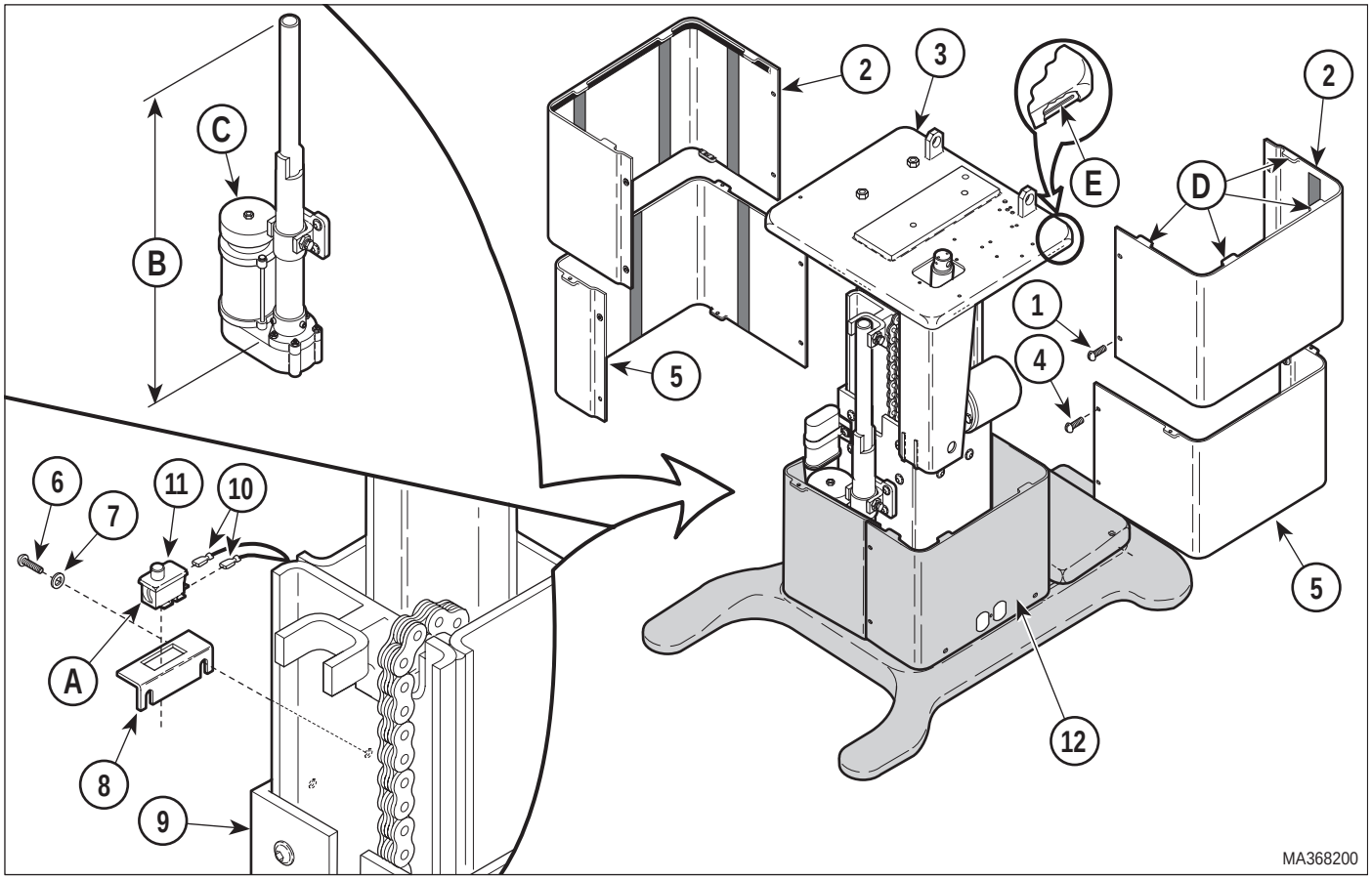

Figure 4-25. Base Down Limit Switch Removal / Installation

(12) Install tabs (D) of R.H. and L.H. outer shrouds (2) in slots (E) of column adapter weldment (3) and secure with four screws (1), making sure middle outer shroud assembly (5) is captured by R.H. and L.H. outer shrouds (2).

C. Adjustment Only

(1) If not already done, perform steps 1 thru 3 of para 4.17A.

(2) Perform steps 4 thru 12 of para 4.17B.

4.18 Base Up Limit Switch Removal / Installation / Adjustment

A. Removal

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Unplug table power cord from outlet receptacle.

(2) Remove four screws (1, Figure 4-26) and R.H. and L.H. outer shrouds (2) from column adapter weldment (3).

(3) Remove four screws (4) and R.H. and L.H. middle shrouds (5).

(4) Disconnect one modular cord (6) from each inlet PC board (7).

(5) Remove four screws (8), four screws (9), two screws (10), two receptacle label plates (11), and partially remove R.H. and L.H. inner shrouds (12) from base casting (13).

(6) Remove two screws (14), washers (15), and partially remove limit switch bracket (16) from column weldment (17).

(7) Cut cable tie (A) securing wire harness (18) to base up limit switch (19).

(8) Disconnect wire harness (18) from terminals of base up limit switch (19).

(9) Remove two nuts (20), screws (21), and base up limit switch (19) from limit switch bracket (16).

B. Installation

(1) Install base up limit switch (19) on limit switch bracket (16) and secure with two screws (21) and nuts (20).

(2) Connect wire harness (18) to terminals of base up limit switch (19).

(3) Secure wire harness (18) to base up limit switch (19) with cable tie (A).

(4) Install switch bracket (16) on column weldment (17) and secure with two washers (15) and screws (14).

(5) Connect one modular cord (6) to each inlet PC board (7).

(6) Plug table power cord into outlet receptacle.

(7) Run TABLE UP function all the way up (until base up limit switch is tripped and stops the table).

EQUIPMENT ALERT
At its fullest extension, Distance B should be 21.48 to 21.55 in. (54.5 to 54.7 cm). Damage will occur to base actuator (C) if Distance B is greater than 21.55 (54.7 cm). The base actuator does not free wheel. Running the base actuator to its limit will damage the base actuator.

(8) Measure Distance B on base actuator.

(9) If Distance B is between 21.48 to 21.55 in. (54.5 to 54.7 cm), go to step 13.
If Distance B is not between 21.48 to 21.55 in. (54.5 to 54.7 cm), go to step 10.

(10) Lower TABLE DOWN function approximately 3 in. (7.6 cm).

NOTE
Moving base up limit switch upward / outward will increase Distance B. Moving base down limit switch inward / downward will decrease Distance B.

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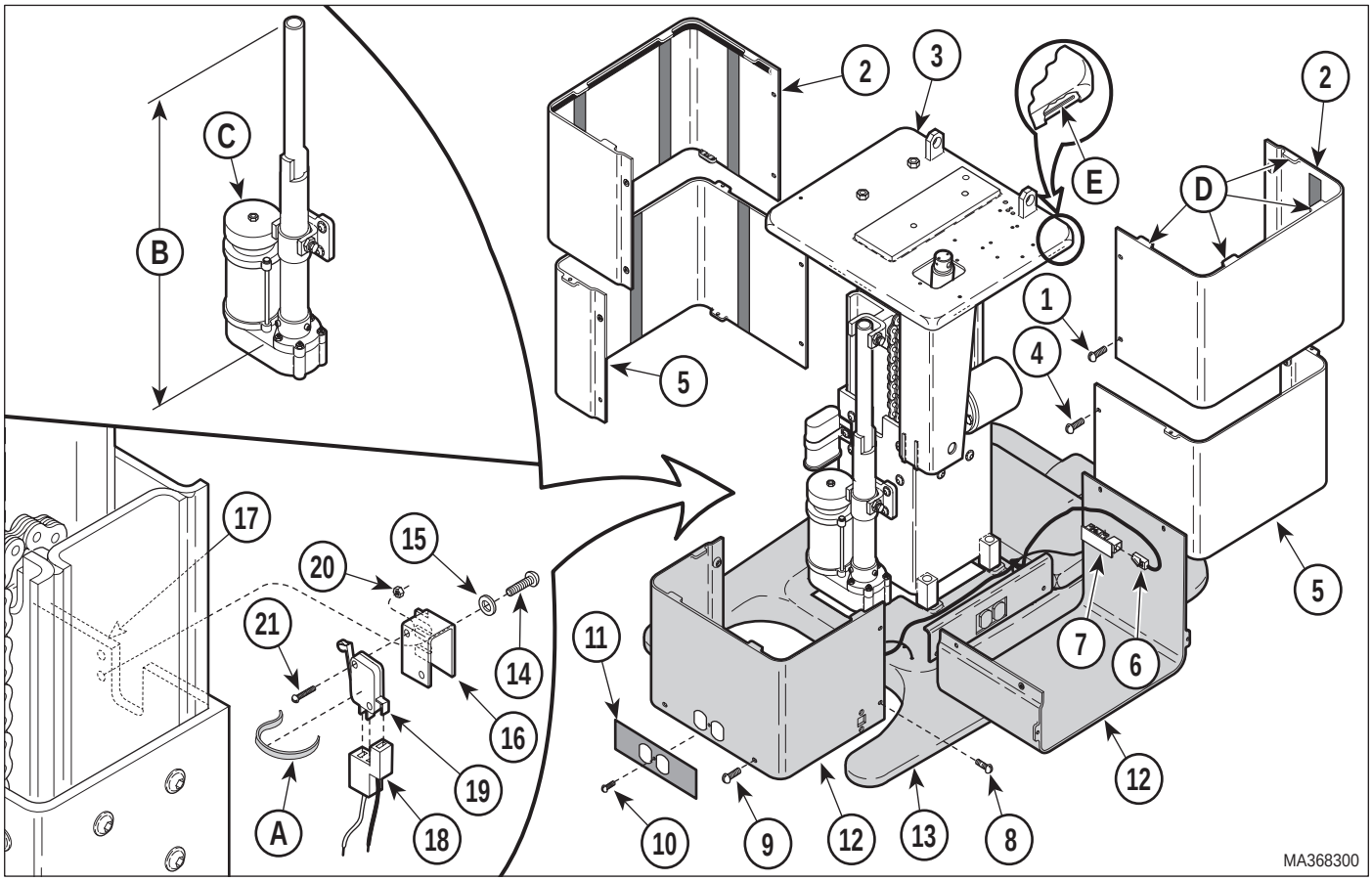

Figure 4-26. Base Up Limit Switch Removal / Installation

(11) Loosen two screws (14); then adjust switch bracket (16) upward / outward or downward / inward as determined necessary in step 9. Tighten two screws (14).

(12) Repeat steps 7 thru 11 until Distance B is between 21.48 to 21.55 in. (54.5 to 54.7 cm). when base actuator (C) is fully extended (stopped by base up limit switch).

(13) Install R.H. and L.H. inner shrouds (12) on base casting (13) and secure with two receptacle label plates (11), two screws (10), four screws (9), and four screws (8).

(14) Assemble R.H. and L.H. middle shrouds (5) around inner shrouds (12) with four screws (4).

(15) Install tabs (D) of R.H. and L.H. outer shrouds (2) in slots (E) of column adapter weldment (3) and secure with four screws (1), making sure middle outer shroud assembly (5) is captured by R.H. and L.H. outer shrouds (2).

C. Adjustment Only

(1) If not already done, perform steps 1 thru 5 of para 4.18A.

(2) Perform steps 6 thru 15 of para 4.18B.

4.19 Pan Safety Limit Switch Removal / Installation / Adjustment

A. Removal

(1) Run FOOT DOWN function all the way down.

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(2) Unplug table power cord from outlet receptacle.

(3) Remove upholstered seat (1, Figure 4-27) from seat board assembly (2).

(4) Remove four screws (3) and seat board assembly (2) from seat weldment (4).

(5) Pull pan slide assembly (A) out.

(6) Disconnect wire harness (5) from pan safety limit switch (6).

(7) Remove two screws (7), cable clamp (8), and pan switch bracket (9) from seat weldment (4).

NOTE
Note the approximate position of the pan safety limit switch (6) on pan switch bracket (9) for installation.

(8) Remove two nuts (10), screws (11), and pan safety limit switch (6) from pan switch bracket (9).

B. Installation

(1) Install pan safety limit switch (6) on pan switch bracket (9) and secure with two screws (11) and nuts (10).

(2) Install assembled pan switch bracket (9) and cable clamp (8) on seat weldment (4) and secure with two screws (7).

(3) Push pan slide assembly (A) all the way in while observing. If pan safety limit switch (6) is properly tripped by pan slide assembly (A) when pan slide assembly is in stowed position, go to step 6. If pan safety limit switch (6) is not properly tripped by pan slide assembly (A) when pan slide assembly is in stowed position, go to step 4.

(4) Loosen two nuts (10); then adjust pan safety limit switch (6) as determined necessary in step 3. Tighten two nuts (10).

(5) Repeat steps 3 and 4 until pan safety limit switch (6) is adjusted properly.

(6) Connect wire harness (5) to pan safety limit switch (6).

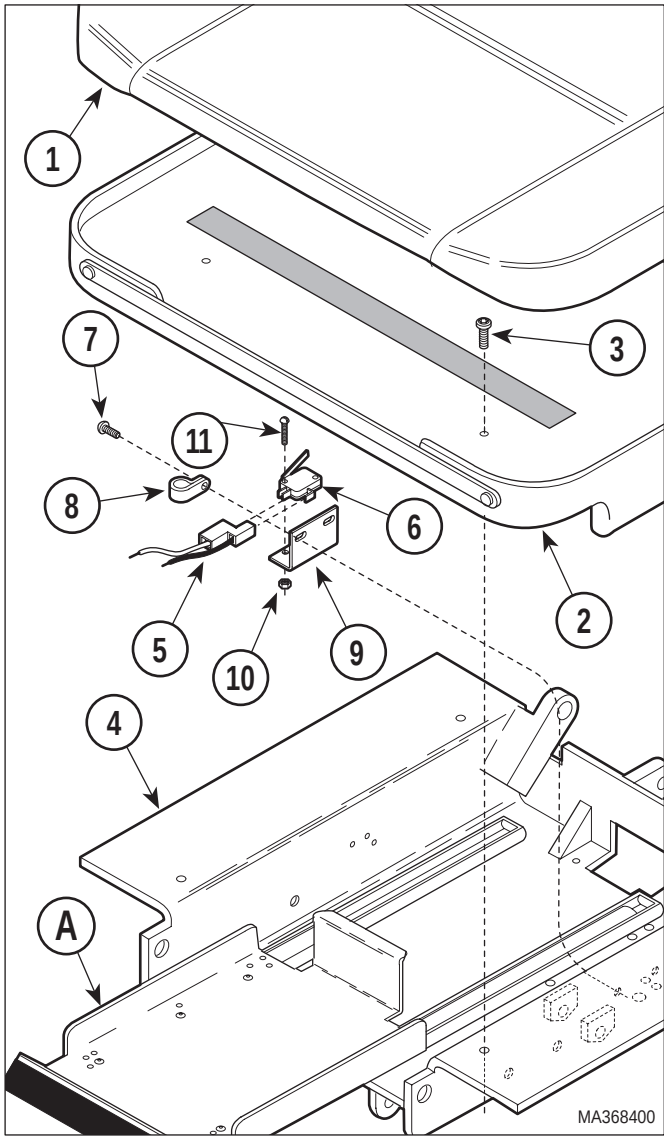

Figure 4-27. Pan Safety Limit Switch Removal / Installation / Adjustment

(7) Push pan slide assembly (A) all the way in.

(8) Coat threads of four screws (3) with removable threadlocking adhesive (Loctite 242).

(9) Install seat board assembly (2) on seat weldment (4) and secure with four screws (3).

(10) Install upholstered seat (1) on seat board assembly (2).

(11) Plug table power cord into outlet receptacle.

C. Adjustment Only

(1) If not already done, perform steps 1 thru 5 of para 4.19A.

(2) Perform steps 3 thru 11 of para 4.19B.

4.20 Chain Tension Check / Adjustment

A. Tension Check / Adjustment

(1) Raise TABLE UP function all the way up.

(2) Operate table top until it is in a horizontal position.

(3) Place supports under foot section and back section of table top. Lower TABLE DOWN function slightly until weight of table top is resting on supports.

(4) Unplug table power cord from outlet receptacle.

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(5) Remove four screws (1, Figure 4-28) and R.H. and L.H. outer shrouds (2) from column adapter weldment (3).

(6) Remove four screws (4) and R.H. and L.H. middle shrouds (5).

(7) Measure slack (measurement B) in chain (6) at a point 1 3/4 to 2 1/4 in. (4.4 to 5.7 cm) above top of outer slide weldment (7) (measurement A).

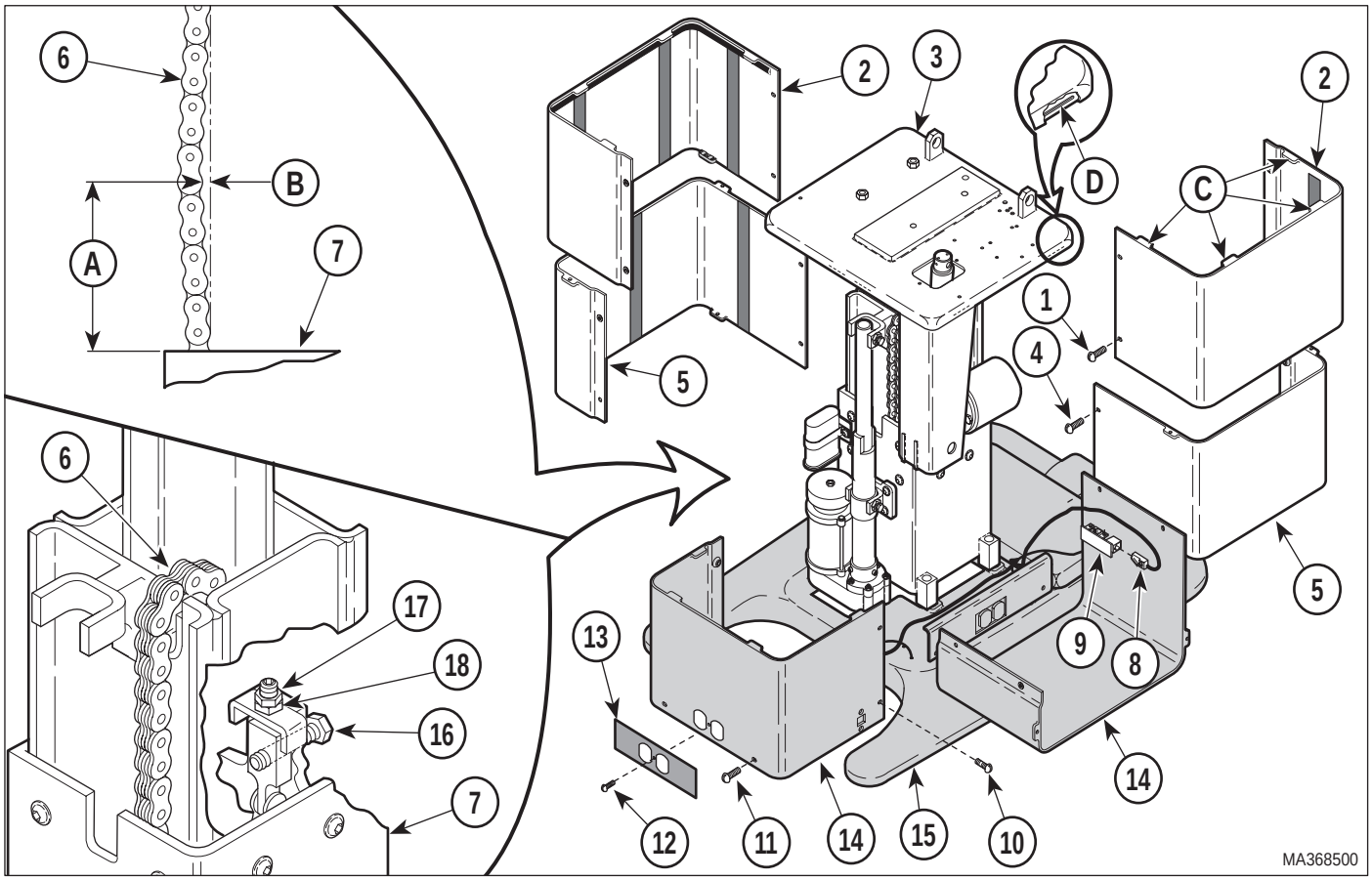

Figure 4-28. Chain Tension Check / Adjustment

(8) If slack in chain (6) is between 1/16 to 3/16 in. (1.6 to 4.8 mm), go to step 18. See measurement B.
If slack in chain (6) is not between 1/16 to 3/16 in. (1.6 to 4.8 mm), go to step 9. See measurement B.

(9) Disconnect one modular cord (8) from each inlet PC board (9).

(10) Remove four screws (10), four screws (11), two screws (12), two receptacle label plates (13), and partially remove R.H. and L.H. inner shrouds (14) from base casting (15).

(11) Loosen locking screw (16).

(12) Loosen jam nut (17).

(13) Tighten adjusting nut (18) until slack in chain (6) is between 1/16 to 3/16 in. (1.6 to 4.8 mm). See measurement B.

(14) Repeat entire procedure to ensure correct adjustment.

(15) Coat threads of jam nut (17) with permanent threadlocking adhesive (Loctite 262).

(16) Tighten jam nut (17).

(17) Tighten locking screw (16).

(18) Connect modular cords (8) to inlet PC boards (9).

(19) Install R.H. and L.H. inner shrouds (14) on base casting (15) and secure with two screws (13), four screws (12), and four screws (11).

(20) Assemble R.H. and L.H. middle shrouds (5) around inner shrouds (14) with four screws (4).

(21) Install tabs (C) of R.H. and L.H. outer shrouds (2) in slots (D) of column adapter weldment (3) and secure with four screws (1), making sure middle outer shroud assembly (5) is captured by R.H. and L.H. outer shrouds (2).

4.21 Eccentric Bearings Adjustment

A. Adjustment

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Unplug table power cord from outlet receptacle.

(2) Remove four screws (1, Figure 4-29) and R.H. and L.H. outer shrouds (2) from column adapter weldment (3).

(3) Remove four screws (4) and R.H. and L.H. middle shrouds (5).

(4) Disconnect modular cords (6) from inlet PC boards (7).

(5) Remove four screws (8), four screws (9), two screws (10), two receptacle label plates (11), and partially remove R.H. and L.H. inner shrouds (12) from base casting (13).

NOTE
The eccentric bearings are divided into four groups for purposes of adjustment. Only one group of bearings can be adjusted at one time. For identification purposes, the left side of table is labeled “L.S.O.T.” and the head end of table is labeled “H.E.O.T.”. Also, the column assembly has two types of bearing assemblies: the concentric tire bearing assembly “C.T.B.A.” and the eccentric tire bearing assembly “E.T.B.A.” The concentric tire bearings are not adjustable, so the following steps refer only to the eccentric tire bearings.

(6) Run TABLE UP and TABLE DOWN function while observing all eccentric bearings (1, Figure 4-30).

(7) Note which eccentric bearings (1) do not rotate during entire movement of column assembly; these are the bearings which need adjusted.

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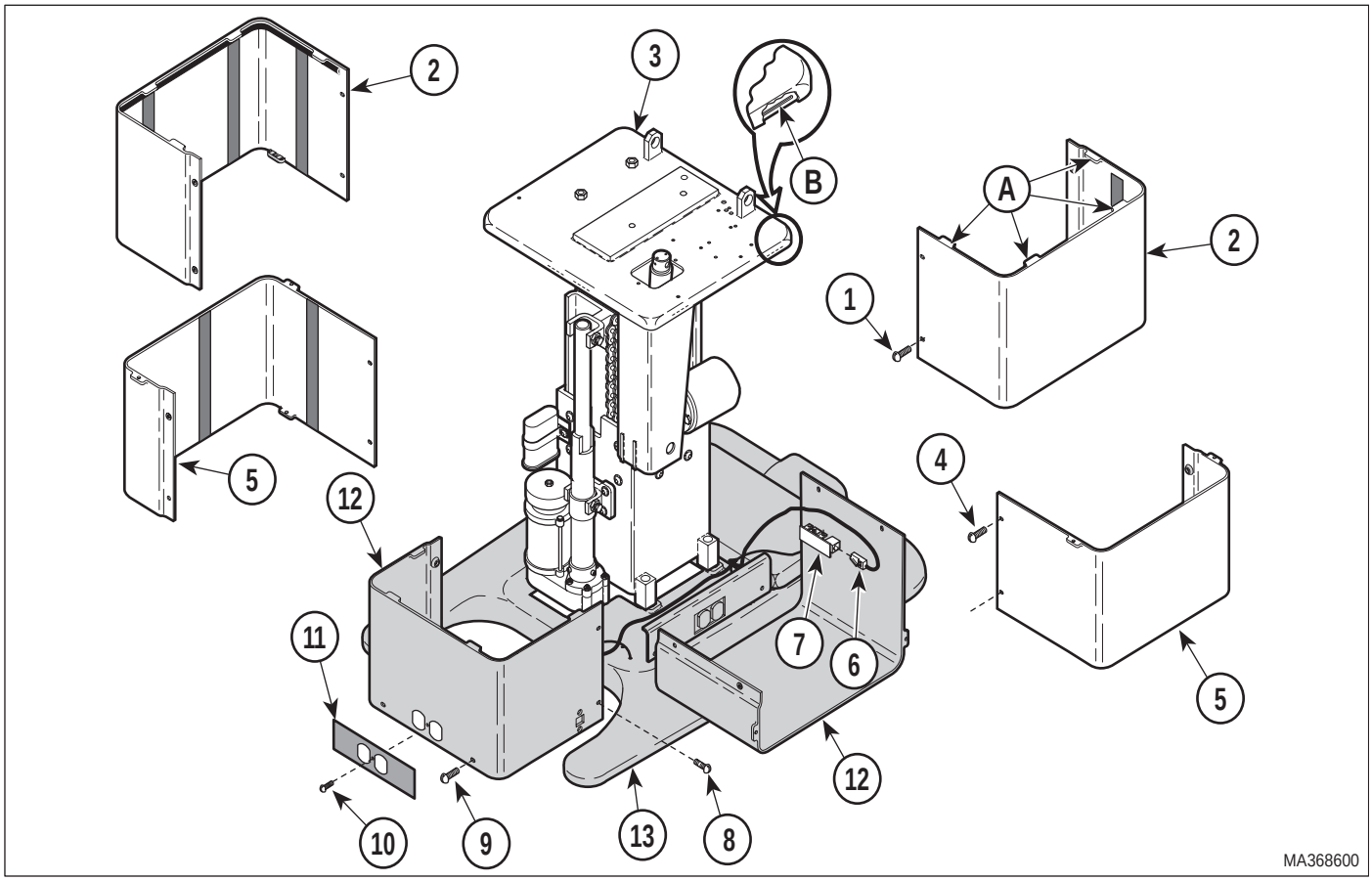

Figure 4-29. Base Shrouds Removal / Installation

(8) Determine what letter group the eccentric bearing you need to adjust is in; Group A1, Group B1, Group C1, or Group D1.

(9) Install 5/16 - 18 x 1-1/4 Bolt(s) (E) in the Tension hole(s) which matches the letter group of eccentric bearing being adjusted; for Group A1, bolt is installed in Tension Hole A2, for Group B1, bolt is installed in Tension Hole B2, for Group C1, bolts are installed in Tension Holes C2, for Group D1, bolts are installed in Tension Holes D2. Refer to Table 1-2 for special tool.

(10) Tighten 5/16 - 18 x 1-1/4 Bolt(s) (E) until tension is relieved from the eccentric bearing (1) being adjusted.

(11) Loosen screw (2) of appropriate eccentric bearing.

(12) Rotate outer tire (3) of eccentric bearing (1) in a clockwise direction (as viewed from outside of column) until eccentric bearing becomes harder / or impossible to rotate (meaning the eccentric spindle (4) in the eccentric bearing is forcing the outer tire against the column weldment rail as desired). Secure eccentric bearing in this position by tightening screw (2) to 23 to 27 ft-lbs. (28.8 to 36.4 N•m).

(13) Remove 5/16 - 18 x 1-1/4 Bolt(s) (E) from Tension hole.

(14) Repeat step 6 thru 13 until all eccentric bearings are properly adjusted.

(15) Connect modular cords (6, Figure 4-29) to inlet PC boards (7).

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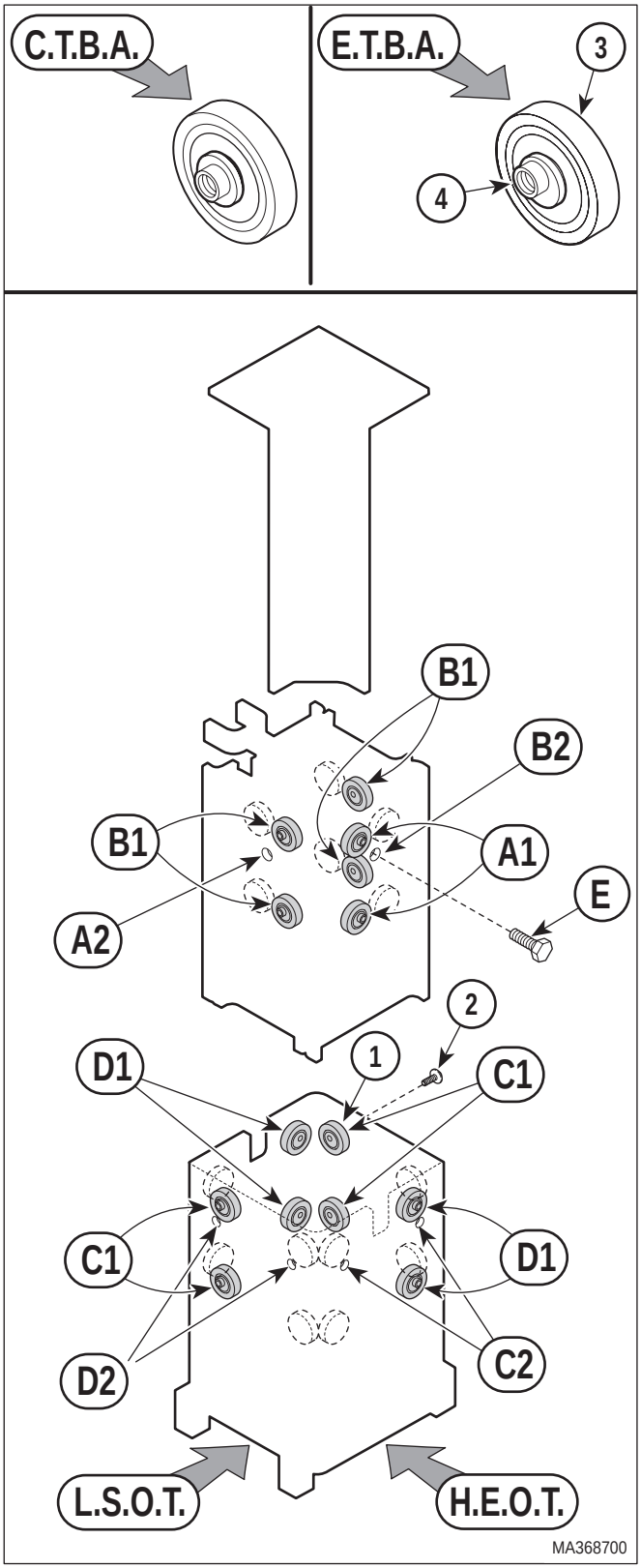

Figure 4-30. Eccentric Bearings Adjustment

(16) Install R.H. and L.H. inner shrouds (12) on base casting (13) and secure with two receptacle label plates (11), screws (10), four screws (9), and four screws (8).

(17) Assemble R.H. and L.H. middle shrouds (5) around inner shrouds (12) with four screws (4).

(18) Install tabs (A) of R.H. and L.H. outer shrouds (2) in slots (B) of column adapter weldment (3) and secure with four screws (1), making sure middle outer shroud assembly (5) is captured by R.H. and L.H. outer shrouds (2).

4.22 Hand / Foot Inlet PC Board Removal / Installation

A. Removal

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Unplug table power cord from outlet receptacle.

(2) Remove four screws (1, Figure 4-31) and R.H. and L.H. outer shrouds (2) from column adapter weldment (3).

(3) Lower middle outer shroud assembly (4) down out of way.

NOTE
The foot inlet PC board (A) is located on the front side of the table. The hand inlet PC board (B) is located on the back side of the table.

(4) Unplug modular cord (5) from port of inlet PC board (6).

(5) Remove screw (7), wire (8), and starwasher (9) from base casting (10).

(6) Remove two screws (11), inlet PC board (6), and spacers (12) from inner shroud (13).

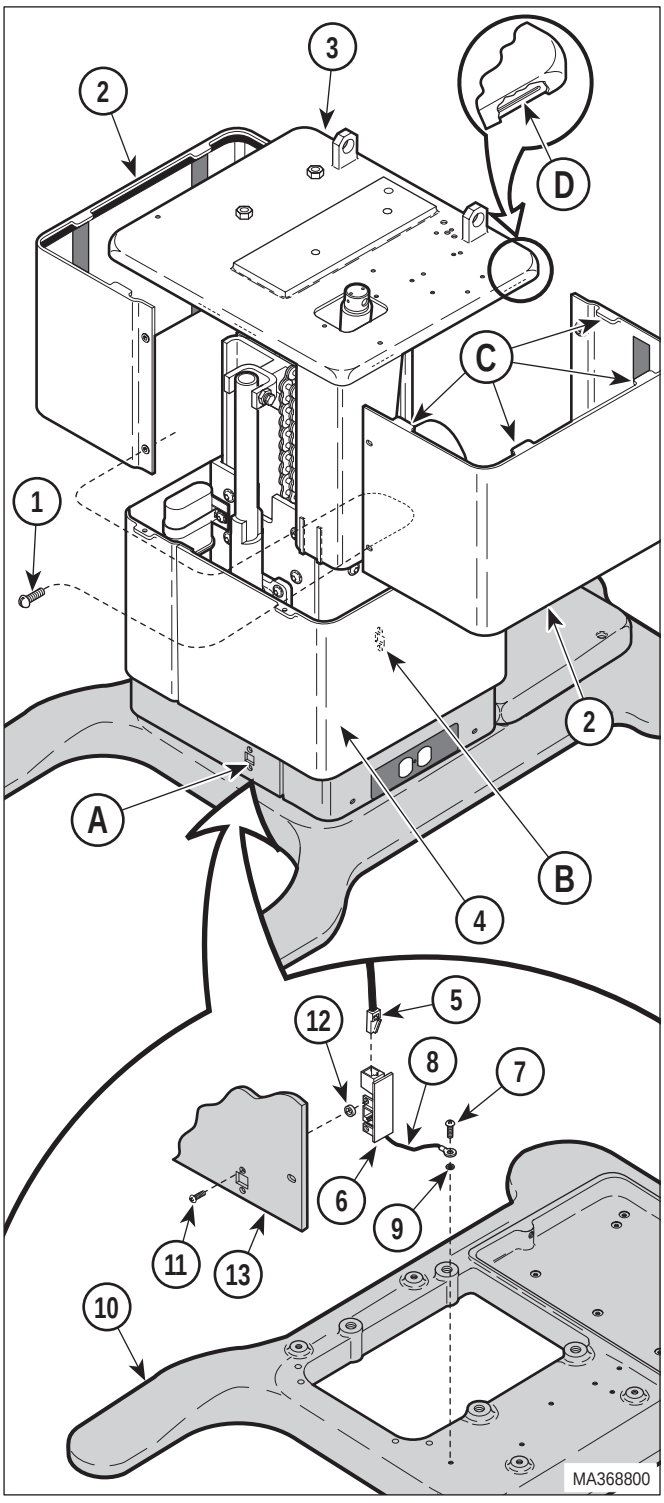

Figure 4-31. Hand / Foot Inlet PC Board Removal / Installation

B. Installation

(1) Install two spacers (12) and inlet PC board (6) on inner shroud (13) and secure with two screws (11).

(2) Connect wire (8) to base casting (10) with star-washer (9) and screw (7).

(3) Plug modular cord (5) into port of inlet PC board (6).

(4) Install tabs (C) of R.H. and L.H. outer shrouds (2) in slots (D) of column adapter weldment (3) and secure with four screws (1), making sure middle outer shroud assembly (4) is captured by R.H. and L.H. outer shrouds (2).

4.23 Hand Control Switch Panel Removal / Installation (Applies To Units With Serial Numbers: GT1000 thru Present)

A. Removal

(1) Disconnect coil cord (1, Figure 4-32) from connector (A) of hand control panel (2).

(2) Remove two screws (3) and bottom end cap (4) from hand control tube (5).

(3) Remove hand control panel (2) from hand control tube (5).

B. Installation

(1) Slide hand control panel (2) into top groove (B) of hand control tube (5).

(2) Install bottom end cap (4) on hand control tube (5) and secure with two screws (3).

(3) Connect coil cord (1) to connector (A) of hand control panel (2).

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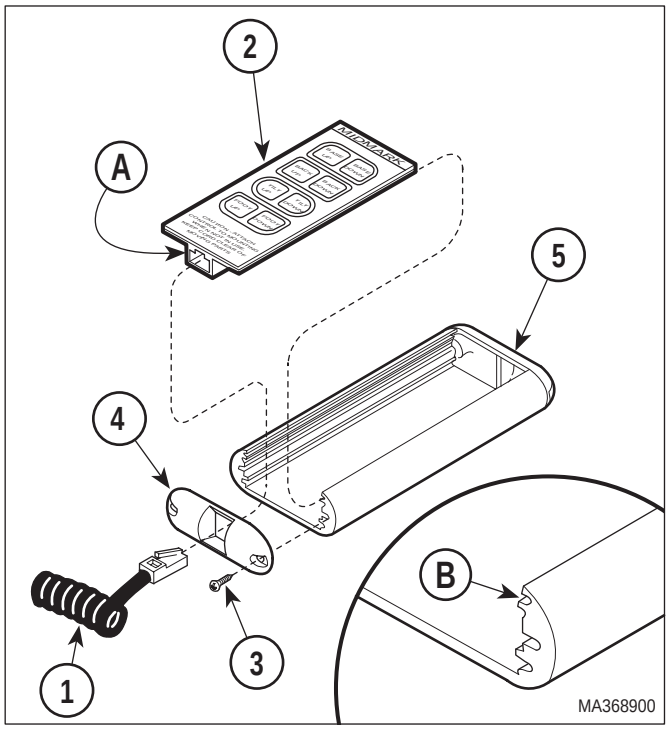

Figure 4-32. Hand Control Switch Panel Removal / Installation

4.24 Hand Control Switch Panel Removal / Installation (Applies To Units With Serial Numbers: GV1000 thru Present)

A. Removal

(1) Disconnect coil cord from table.

(2) Remove two screws (1, Figure 4-33) and top end cap (2) from hand control tube (3).

(3) Pull hand control switch panel (4) from hand control tube (3).

(4) Disconnect ribbon connector (A) of hand control switch panel (4) from hand control PC board assembly (5).

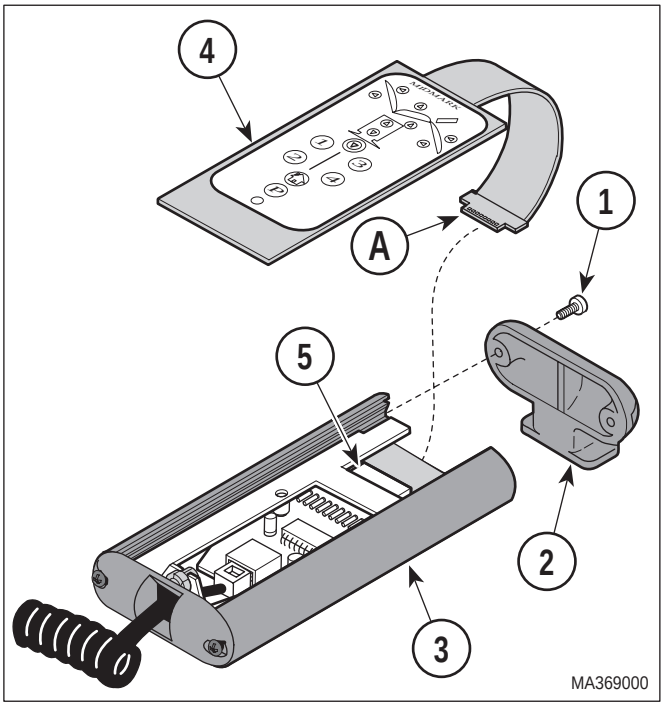

Figure 4-33. Hand Control Switch Panel Removal / Installation

B. Installation

(1) Connect ribbon connector (A) of hand control switch panel (4) to hand control PC board assembly (5).

EQUIPMENT ALERT
Creasing the ribbon connector (A) may result in a malfunction of the hand control.

(2) Slide hand control switch panel (4) into the top slot of hand control tube (3), taking care not to crease the ribbon connector (A).

(3) Install top end cap (2) on hand control tube (3) and secure with two screws (1).

4.25 Hand Control PC Board Removal / Installation (Applies To Units With Serial Numbers: GV1000 thru Present)

A. Removal

(1) Disconnect coil cord from table.

(2) Remove two screws (1, Figure 4-34) and separate bottom end cap (2) from hand control tube (3).

(3) Pull hand control switch panel (4) and hand control PC board assembly (5) from hand control tube (3).

(4) Remove fishpaper insulator (6) from hand control tube (3).

(5) Disconnect ribbon connector (A) of hand control switch panel (4) from hand control PC board assembly (5).

(6) Remove two screws (7), spacers (8), and hand control PC board (9) from interface card bracket (10).

(7) Disconnect coil cord (11) from hand control PC board (9) and remove board.

B. Installation

(1) Connect coil cord (11) to hand control PC board (9).

(2) Install hand control PC board (9) and spacers (8) on interface card bracket (10) and secure with two screws (7).

(3) Connect ribbon connector (A) of hand control switch panel (4) to hand control PC board assembly (5).

EQUIPMENT ALERT
Creasing the ribbon connector (A) may result in a malfunction of the hand control.

(4) Simultaneously slide hand control switch panel (4) into slot (B) of hand control tube (3) and hand control PC board assembly (5) into slot (C) of hand control tube (3), taking care not to crease the ribbon connector (A).

(5) Slide fishpaper insulator (6) into hand control tube (3).

(6) Install bottom end cap (2) on hand control tube (3) and secure with two screws (1).

(7) Connect coil cord to table.

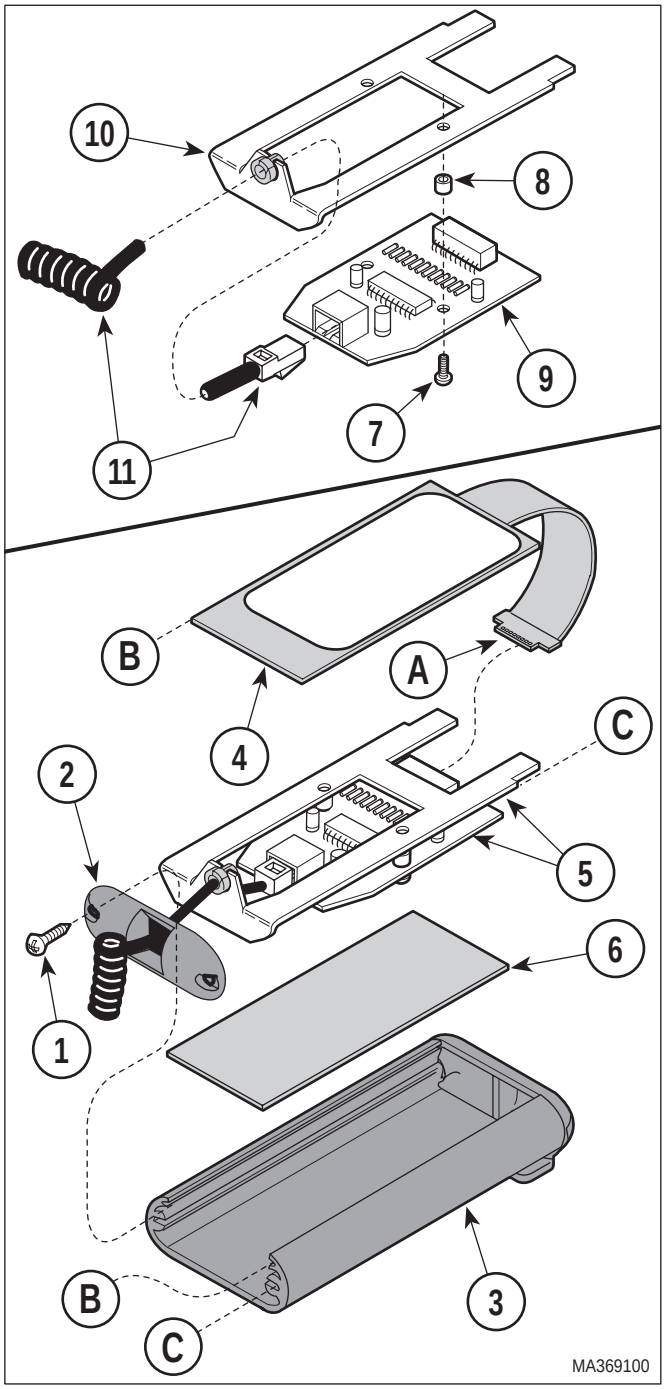

Figure 4-34. Hand Control PC Board Removal / Installation

4.26 Hand Control PC Board Removal / Installation (Applies To Units With Serial Numbers: JX1000, JY1000, HY1000, HZ1000, and LS1000 thru Present)

A. Removal

(1) Disconnect coil cord (1, Figure 4-35) from table.

(2) Remove four screws (2) and hand control bottom (3) from hand control top (4).

(3) Disconnect coil cord (1) from PC board (5).

(4) Disconnect ribbon conector (6) from PC board (5)

NOTE
To remove hand control switch panel, peel adhesive switch panel from hand control top; then pull ribbon connector thru slot in hand control top.

(5) Using a flat-bladed screwdriver, pry upward on two retaining rings (7) until they separate from two standoffs (8); then remove PC board (5).

B. Installation

NOTE
To install hand control switch panel, peel backing from switch panel, insert ribbon connector thru slot in hand control top; then position switch panel on hand control top and apply pressure.

(1) Connect ribbon connector (6) to PC board (5).

NOTE
Be sure to push two retaining rings all the way down against PC board.

(2) Install PC board (5) on two standoffs (8) and secure with two retaining rings (7).

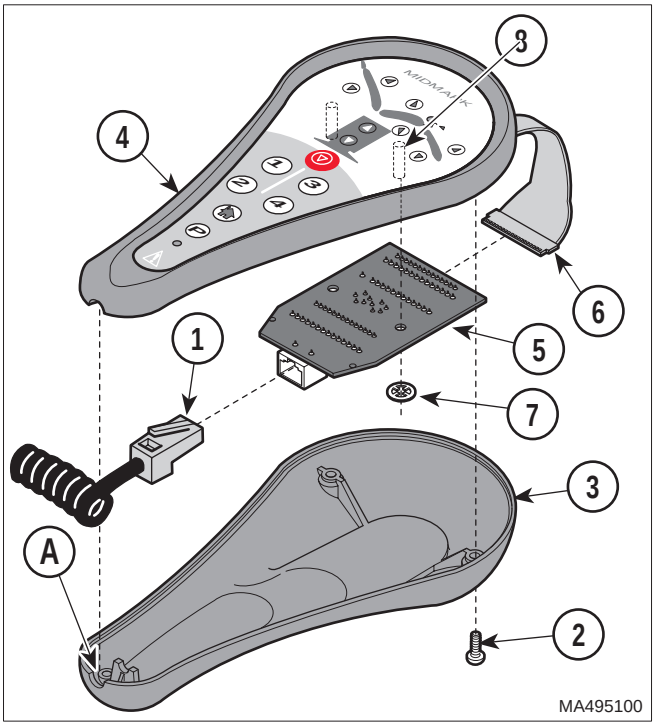

Figure 4-35. Hand Control PC Board Removal / Installation

(3) Connect coil cord (1) to PC board (5).

EQUIPMENT ALERT
Be sure to align coil cord (1) with notch (A) in hand control bottom (3). Failure to do so could result in damage to coil cord.

(4) Install hand control bottom (3) on hand control top (4) and secure with four screws (2).

(5) Connect coil cord (1) to table.

4.27 Foot Control PC Board Removal / Installation (Applies To Units With Serial Numbers: GT1000 & GV1000 thru Present)

A. Removal

(1) Disconnect foot control coil cord from table.

(2) Remove two screws (1, Figure 4-36) and partially separate foot switch bracket (2) from foot control casting (3).

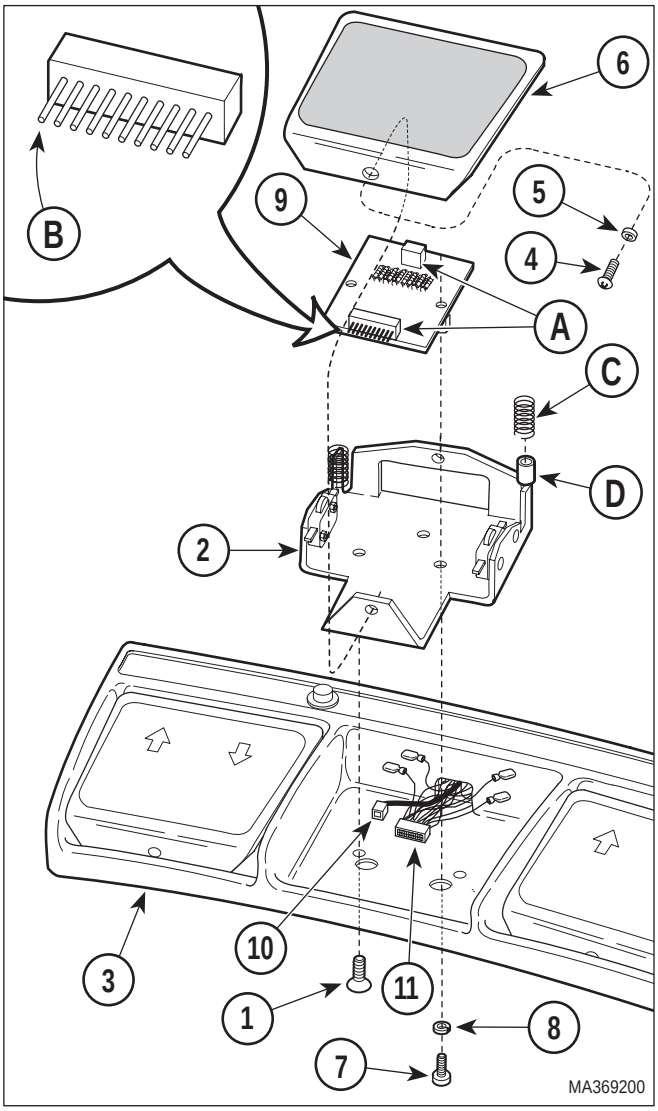

Figure 4-36. Foot Control PC Board Removal / Installation

(3) Remove screw (4), spacer (5), and pedal (6) from foot switch bracket (2).

(4) Remove two screws (7), lockwashers (8), and partially separate interface board (9) from foot switch bracket (2).

(5) Disconnect modular cord (10) and wire harness (11) from connectors (A) of interface board (9).

B. Installation

EQUIPMENT ALERT
On non-programmable tables only, when connecting wire harness (11) to interface board, make sure pin (B) of connector (A) is not used. This terminal should still be visible after wire harness is connected. Failure to do so will result in foot control malfunction.

(1) Connect wire harness (11) and modular cord (10) to connectors (A) of interface board (9).

(2) Install interface board (9) on standoffs and secure with two lockwashers (8) and screws (7).

(3) Ensure springs (C) and spacers (D) are in position and have not fallen off.

(4) Install pedal (6) on foot switch bracket (2) and secure with spacer (5) and screw (4) making sure pedal is mounted on pivot spacer.

(5) Install foot switch bracket (2) on foot control casting (3) and secure with two screws (1).

4.28 Foot Control Top Removal / Installation (Applies To Units With Serial Numbers: JX1000 & HY1000 thru Present)

A. Removal

(1) Disconnect coil cord (1, Figure 4-37) from table.

(2) Remove two screws (2) and strain relief bracket (3).

(3) Remove four screws (4) and partially separate foot control top (5) from foot control base (6).

(4) Disconnect coil cord (1) from PC board (7).

(5) Disconnect wire harness (8) from PC board (7) and remove foot control top (4).

B. Installation

(1) Connect wire harness (8) to PC board (7).

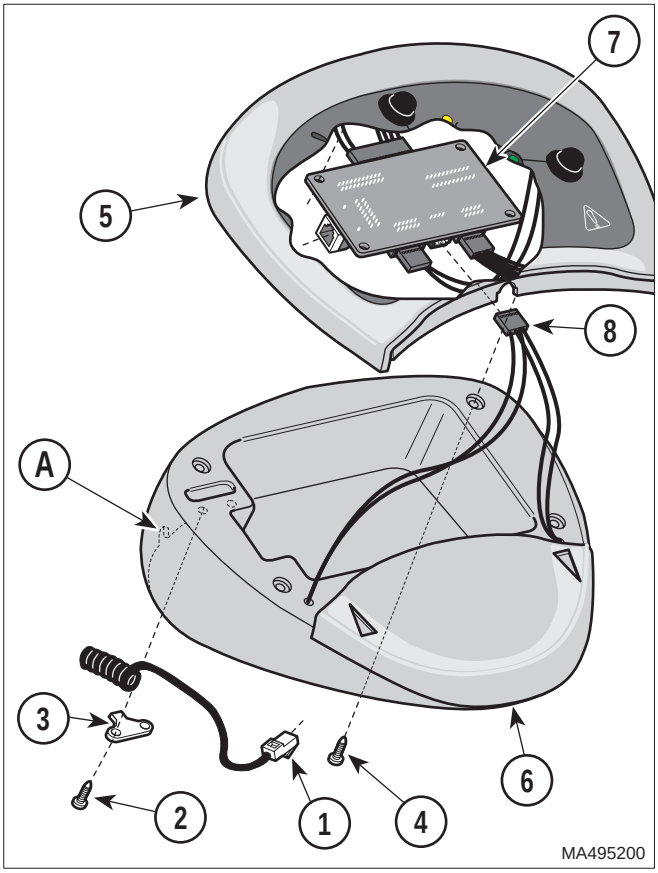

Figure 4-37. Foot Control Top Removal / Installation

(2) Connect coil cord (1) to PC board (7).

(3) Install foot control top (5) onto foot control base (6) and secure with four screws (4).

(4) Place coil cord (1) into notch (A) of foot control base (6); then install strain relief bracket (3) and secure with two screws (2).

4.29 Foot Control Top Removal / Installation (Applies To Units With Serial Numbers: JY1000, HZ1000 & LS1000 thru Present)

A. Removal

(1) Disconnect coil cord (1, Figure 4-38) from table.

(2) Remove four screws (2), four screws (3) and bottom cover (4).

(3) Remove two screws (5), and strain relief bracket (6).

(4) Disconnect coil cord (1) from PC board (7).

(5) Disconnect wire harness (8) from PC board (7) and remove foot control top (9) from foot control base (10).

B. Installation

(1) Connect wire harness (8) to PC board (7).

(2) Install foot control top (9) onto foot control base (10) and secure with four screws (2).

(3) Connect coil cord (1) to PC board (7).

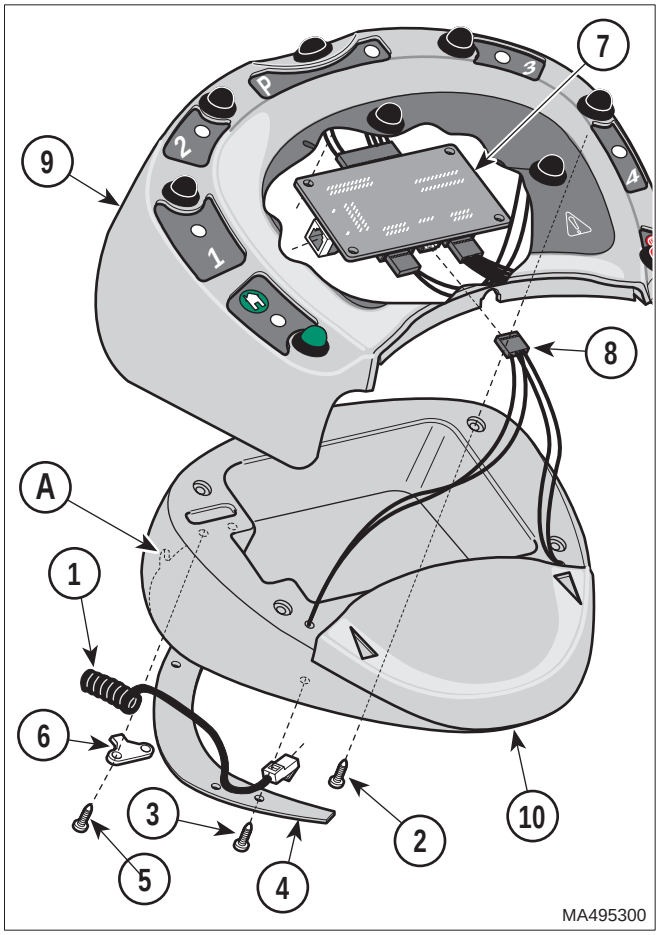

Figure 4-38. Foot Control Top Removal / Installation

(4) Place coil cord (1) into notch (A) of foot control base (10); then install strain relief bracket (6) and secure with two screws (5).

(5) Install bottom cover (4) and secure with four screws (3).

4.30 Foot Control PC Board Removal / Installation (Applies To Units With Serial Numbers: JX1000, JY1000, HY1000, HZ1000, and LS1000 thru Present)

A. Removal

(1) Remove foot control top. (Refer to para 4.28 ***or*** 4.29).

(2) Disconnect three wire harnesses (1, Figure 4-39) from PC board (2).

(3) Remove four screws (3) and PC board (2) from foot control top (4).

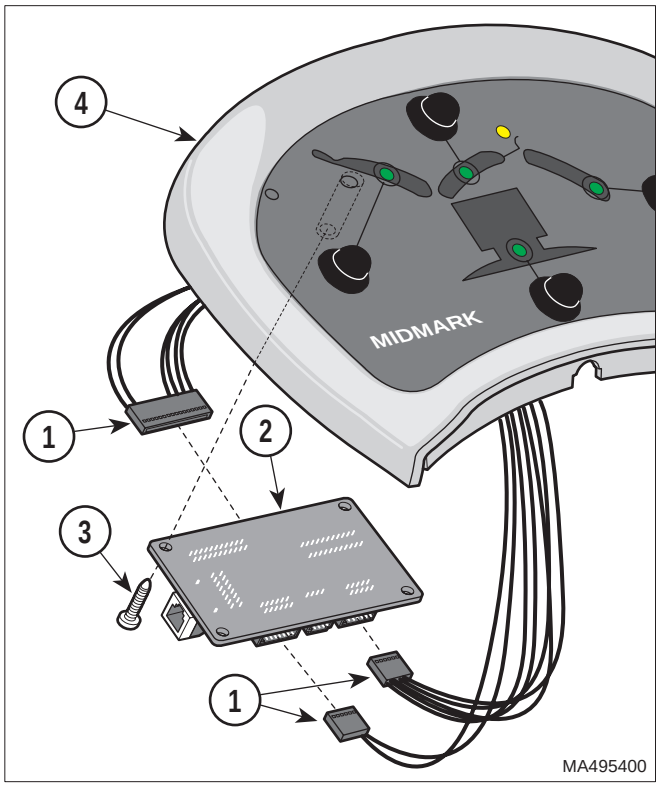

Figure 4-39. Foot Control PC Board Removal / Installation

B. Installation

(1) Install PC board (2) and secure to foot control top (4) with four screws (3).

(2) Connect three wire harnesses (1) to PC board (2).

(3) Install foot control top. (Refer to para 4.28 ***or*** 4.29).

4.31 Typical Foot Control *Foot Pedal* Switch Removal / Installation (Applies To Units With Serial Numbers: GT1000 and GV1000 thru Present)

NOTE
The non-programmable foot control is shown. However, removal of a foot pedal foot switch from a programmable foot control is the same.

A. Removal

(1) Unplug foot control cord from table.

(2) Remove two screws (1, Figure 4-40) and partially separate foot switch bracket (2) from foot control casting (3).

(3) Remove screw (4), spacer (5), and pedal (6) from foot switch bracket (2).

(4) Tag and disconnect two wires (7) from terminals of foot switch (8).

(5) Remove two nuts (9), lockwashers (10), screws (11), and foot switch (8) from foot switch bracket (2).

B. Installation

(1) Install foot switch (8) on foot switch bracket (2) and secure with two screws (11), lockwashers (10), and two nuts (9).

(2) Connect two wires (7) to terminals of foot switch (8).

(3) Ensure springs (A) and spacers (B) are in position and have not fallen off.

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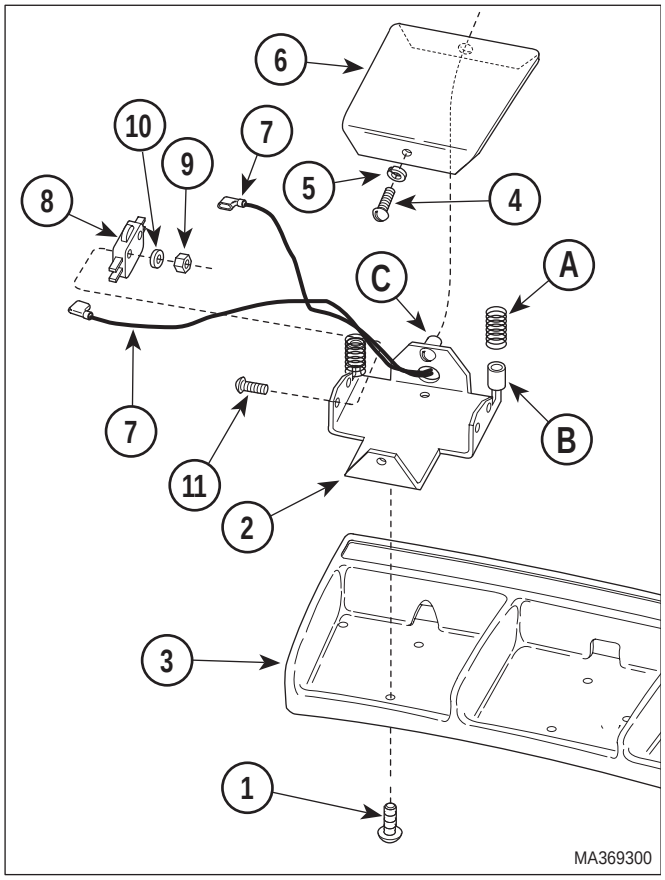

Figure 4-40. Typical Foot Control *Foot Pedal* Switch Removal / Installation

(4) Install pedal (6) on foot switch bracket (2) and secure with spacer (5) and screw (4) making sure pedal is mounted on pivot spacer (C).

(5) Install foot switch bracket (2) on foot control casting (3) and secure with two screws (1).

4.32 Typical Foot Control *Function Button* Switch Removal / Installation (Applies To Units With Serial Numbers: GV1000 thru Present)

A. Removal

(1) Unplug foot control cord from table.

(2) Remove three screws (1, Figure 4-41), four screws (2), glides (3), and wire channel cover (4) from foot control casting (5).

(3) Disconnect two wires (6) from terminals of foot switch (7).

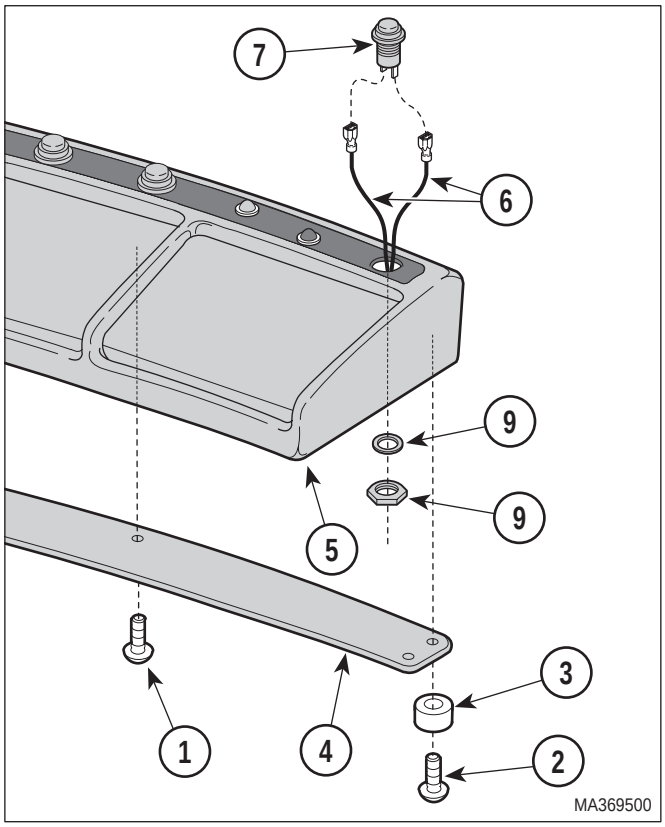

Figure 4-41. Typical Foot Control *Function Button* Switch Removal / Installation

(4) Remove nut (8), starwasher (9), and foot switch (7) from foot control casting (5).

B. Installation

(1) Install foot switch (7) on foot control casting (5) and secure with starwasher (9) and nut (8).

(2) Connect two wires (6) to terminals of foot switch (7).

(3) Install wire channel cover (4) on foot control casting (5) and secure with four glides (3), four screws (2), and three screws (1).

(4) Plug foot control cord into table.

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4.33 Typical Foot Control *Foot Pedal* Switch Removal / Installation (Applies to units with Serial Numbers: JX1000, JY1000, HY1000, HZ1000, and LS1000 thru Present)

A. Removal

(1) Remove foot control top. (Refer to para 4.28 ***or*** 4.29).

(2) Remove four screws (1, Figure 4-42), two pedal caps (2), foot control pedal (3) and two springs (4) from foot control base (5).

(3) Tag switch lead (6) with position; then using an instrument with a sharp point, gently depress release tab (A) and pull lead from wire harness connector (7). Repeat this procedure for the second switch lead.

(4) Remove two screws (8) and switch cover (9).

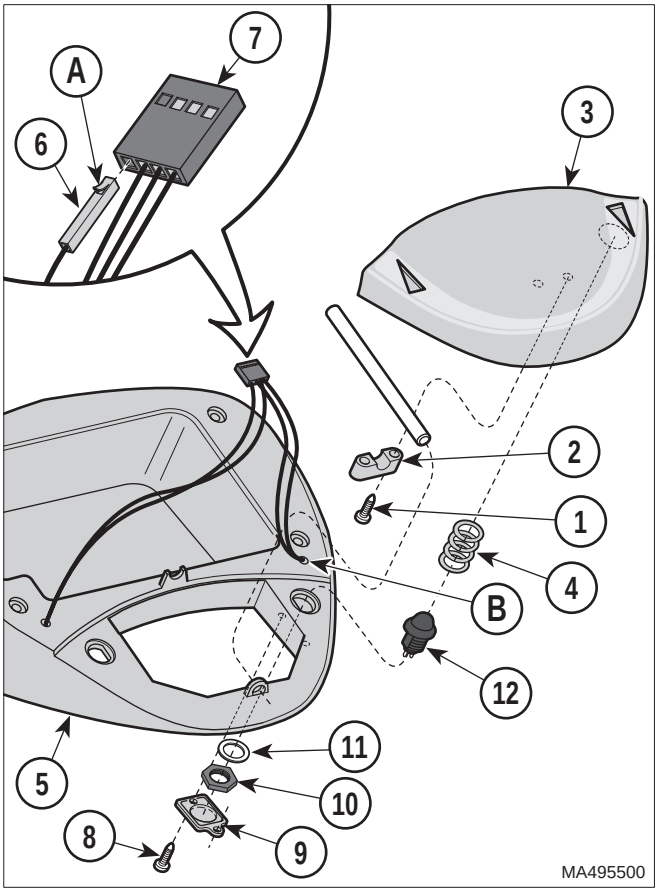

Figure 4-42. Foot Control *Foot Pedal* Switch Removal / Installation

(5) Pull two switch leads (6) thru hole (B).

(6) Remove nut (10), lockwasher (11) and switch (12) from foot control base (5).

B. Installation

EQUIPMENT ALERT
The soldered connections at the switch are very delicate. Use caution when tightening nut (10). Failure to do so could result in broken connections at the switch.

(1) Install switch (12) into foot control base (5) and secure with lockwasher (11) and nut (10).

(2) Feed two switch leads (6) up thru hole (B).

(3) Check release tabs (A) of two switch leads (6). If they are not angled upward slightly as shown, use a small tool to bend them upward.

(4) Insert switch leads (6) into wire harness connector (7), making sure each release tab (A) of lead is oriented so it will latch securely into place. Very gently pull on switch leads to ensure they are secure.

(5) Install switch cover (9) and secure with two screws (8).

(6) Install two springs (4), foot control pedal (3) and two pedal caps (2) and secure with four screws (1).

(7) Install foot control top. (Refer to para 4.28 ***or*** 4.29).

4.34 Typical Foot Control *Function Button* Switch Removal / Installation (Applies to units with Serial Numbers: JX1000, JY1000, HY1000, HZ1000, and LS1000 thru Present)

A. Removal

(1) Remove foot control top. (Refer to para 4.28 ***or*** 4.29).

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(2) Remove four screws (1, Figure 4-43) and partially separate PC board (2) from foot control top (3).

NOTE
Be sure to trace switch leads from faulty switch to proper wire harness connector at PC board.

(3) Disconnect wire harness connector (4) from PC board (2).

(4) Tag switch lead (5) with position; then using an instrument with a sharp point, gently depress release tab (A) of switch lead and pull switch lead out of wire harness connector. Repeat this procedure for second switch lead.

(5) Remove nut (6), lockwasher (7) and switch (8) from foot control top (3).

B. Installation

EQUIPMENT ALERT
The soldered connections at the switch are very delicate. Use caution when tightening nut (6). Failure to do so could result in broken connections at the switch.

(1) Install switch (8) into foot control top (3) and secure with lockwasher (7) and nut (6).

(2) Check release tabs (A) of two switch leads (5). If they are not angled upward slightly as shown, use a small tool to bend them upward.

(3) Insert two switch leads (5) into wire harness connector (4), making sure each release tab (A) is oriented so it will latch securely into place. Very gently pull on switch leads to ensure they are secure.

(4) Connect wire harness connector (4) to PC board (2).

(5) Secure PC board (2) to foot control top (3) with four screws (1).

(6) Install foot control top. (Refer to para 4.28 ***or*** 4.29).

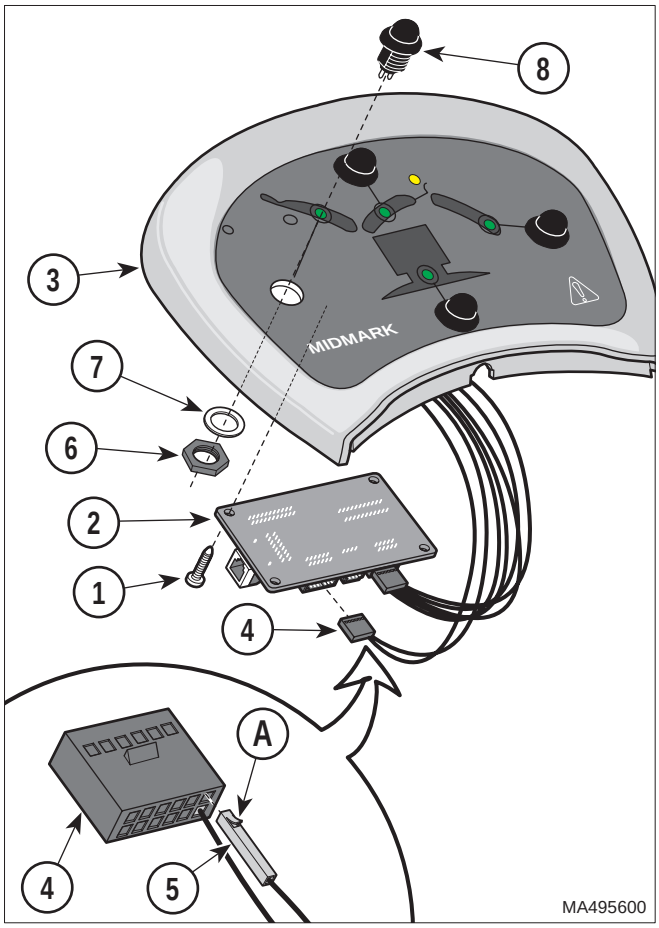

Figure 4-43. Typical Foot Control *Function Button* Switch Removal / Installation.

4.35 Typical Foot Control Lamp Removal / Installation (Applies To Units With Serial Numbers: GV1000 thru Present)

A. Removal

(1) Unplug foot control cord from table.

(2) Remove three screws (1, Figure 4-44), four screws (2), glides (3), and wire channel cover (4) from foot control casting (5).

(3) Tag two wires (6) and two wires (7).

(4) Disconnect connector (8) from connector receptacle (9).

(5) Using an instrument (A) with a sharp point, gently depress release tab (B) and pull wire (6 or 7) from connector (8). Repeat this step for the three remaining wires.

(6) Remove two lamps (10 and 11) from foot control casting (5).

B. Installation

(1) Get new lamp assembly. Using an instrument (A) with a sharp point, press on release tab (B) and pull wire (6 or 7) from connector (8). Repeat this step for the three remaining wires.

NOTE
The amber (yellow) lamp must be installed in the PAN OUT hole and the green lamp must be installed in the PROGRAM mode hole.

(2) Install two lamps (10 and 11) in foot control casting (5), making sure they are firmly seated.

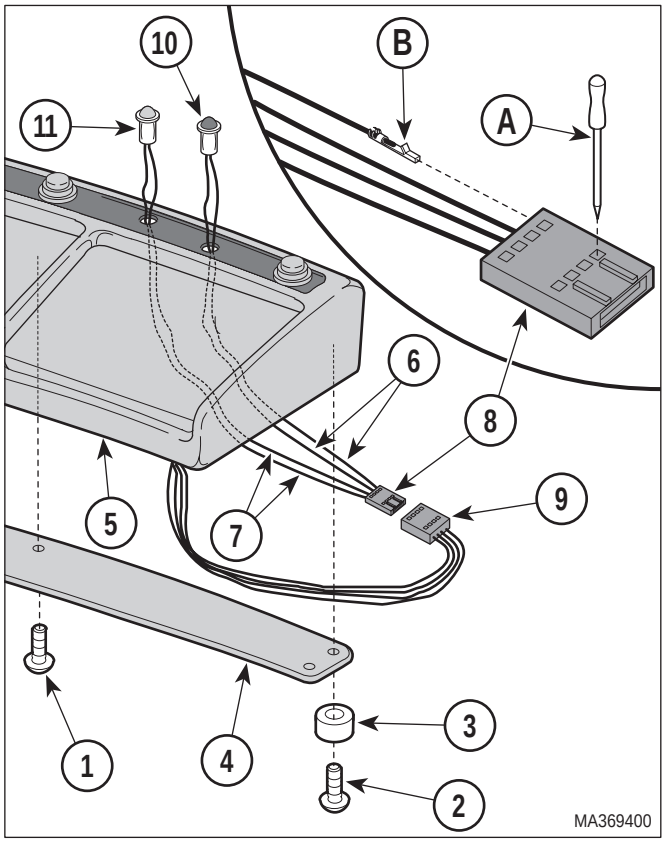

Figure 4-44. Typical Lamp Removal / Installation

(3) Check release tabs (B) of wires (6 and 7). If they are not angled upward slightly as shown, use a small tool to bend them upward.

(4) Insert wires (6 and 7) into connector (8), making sure each release tab (A) of wire is oriented correctly so it will latch the wire securely into the connector. Very gently tug on wires (6 and 7) to ensure they are securely latched into connector (8).

(5) Plug connector (8) into connector receptacle (9).

(6) Install wire channel cover (4) on foot control casting (5) and secure with four glides (3), four screws (2), and three screws (1).

(7) Plug foot control cord into table.

4.36 Typical Foot Control Lamp Removal / Installation (Applies To Units With Serial Numbers: HY1000, HZ1000, JX1000, JY1000 and LS1000 thru Present)

A. Removal

(1) Remove foot control top. (Refer to para 4.28 ***or*** 4.29).

(2) Remove bulb socket (1, Figure 4-45) from foot control top (2).

(3) Remove bulb (3) from bulb socket (1).

B. Installation

(1) Install bulb (3) into bulb socket (1).

(2) Insert bulb socket (1) thru hole in foot control top (2).

(3) Install foot control top. (Refer to para 4.28 ***or*** 4.29).

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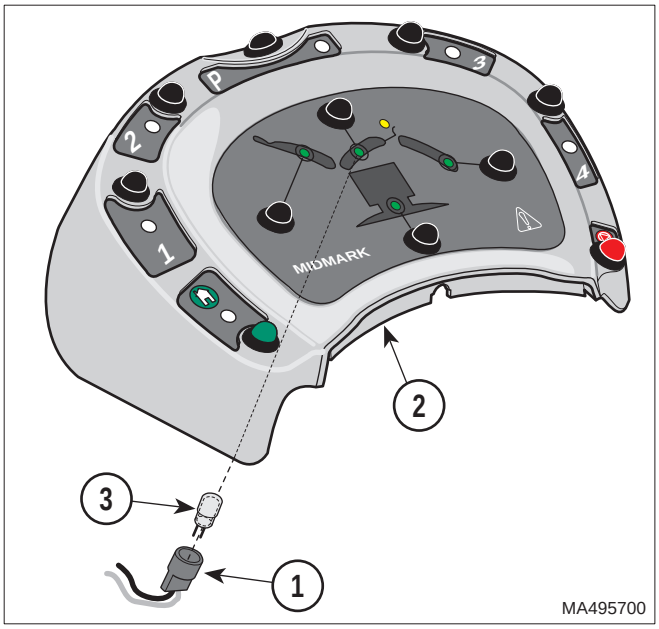

Figure 4-45. Typical Foot Control Lamp Removal / Installation

4.37 Headrest Adjustment

A. Adjustment

(1) Unlock upper lock handle (A, Figure 4-46).

(2) Loosen setscrew (1).

NOTE
The maximum force required to unclamp a locking handle should be 17 lbs. (7.7 kg) and the maximum force required to clamp a locking handle should be 35 lbs. (15.8 kg).

(3) Tighten adjusting screw (2) slightly; then lock upper lock handle (A). Repeat this step until Axis B and C have the strongest possible holding power, but operation of upper lock handle (A) is not too difficult.

(4) Tighten setscrew (1).

(5) Unlock lower lock handle (D).

(6) Loosen setscrew (3).

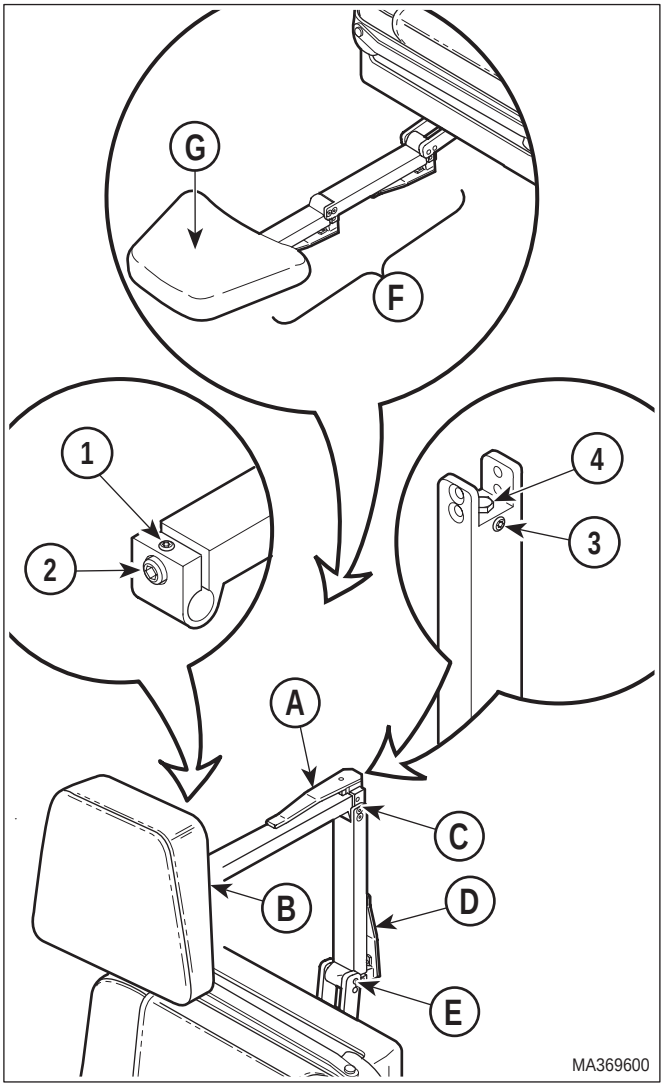

Figure 4-46. Headrest Adjustment

(7) Tighten adjusting screw (4) slightly; then lock lower lock handle (D). Repeat this step until Axis (E) has the strongest possible holding power, but operation of lower lock handle (D) is not too difficult.

(8) Tighten setscrew (3).

(9) Lower BACK DOWN function all the way down.

(10) Position headrest assembly (F) as shown in top bubble of Figure 4-46.

(11) Place a 45 lb. (20.4 kg) weight on headrest assembly at Point (G).

DANGER
Failure to adjust headrest assembly to specifications could result in a failure during a procedure. This could cause severe personal injury to a patient or the need to terminate the procedure.

(12) Observe. The headrest assembly (F) should support the test weight without drifting downward. If not, repeat entire adjustment procedure. If headrest assembly cannot be adjusted to test standards, do not use headrest assembly.

4.38 Headrest Handles Handle Stops Adjustment

A. Adjustment

(1) Loosen nut (1, Figure 4-47).

(2) Push on upper lock handle (A) until it reaches a point where the upper lock handle wants to lock itself by going over center; then allow upper lock handle to go over center a few degrees. Hold the upper lock handle in this position and adjust stop screw (2) so the upper lock handle will be forced to stop in this position each time it is locked.

(3) Tighten nut (1).

(4) Loosen nut (3).

(5) Push on lower lock handle (B) until it reaches a point where the lower lock handle wants to lock itself by going over center; then allow lower lock handle to go over center a few degrees. Hold the lower lock handle in this position and adjust stop screw (4) so the lower lock handle will be forced to stop in this position each time it is locked.

(6) Tighten nut (3).

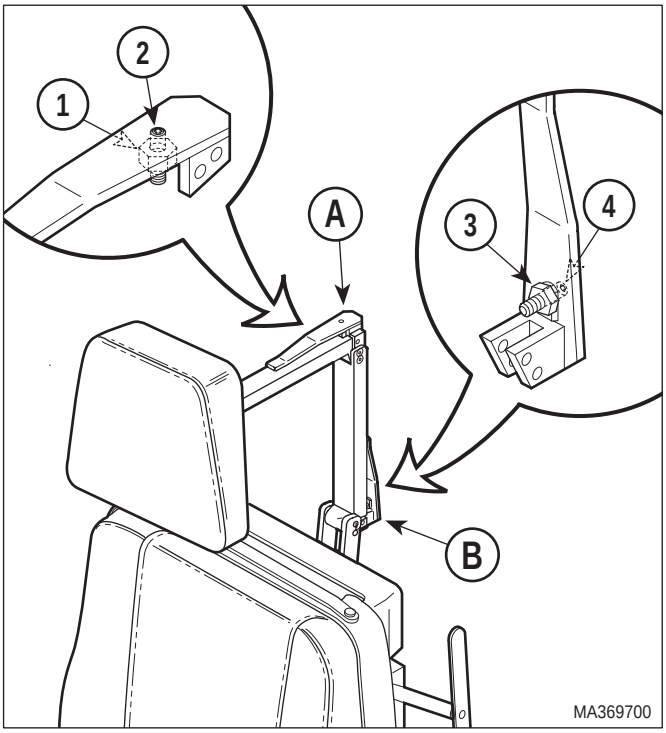

Figure 4-47. Headrest Handles Handle Stops Adjustment

4.39 Stirrup Assembly Removal / Installation

A. Removal

(1) Insert screwdriver in access hole (A) and remove screw (1, Figure 4-48) from stirrup assembly (2).

(2) Pull stirrup assembly (2) out of pivot boss (3).

NOTE
Stirrup guide bracket (4) is too wide to removed thru front side of stirrup mount weldment; it must be removed out back side.

(3) Remove pivot boss (3) and stirrup guide bracket (4) from stirrup mount weldment (5).

(4) If damaged, remove stirrup index spring (6) from stirrup guide bracket (4).

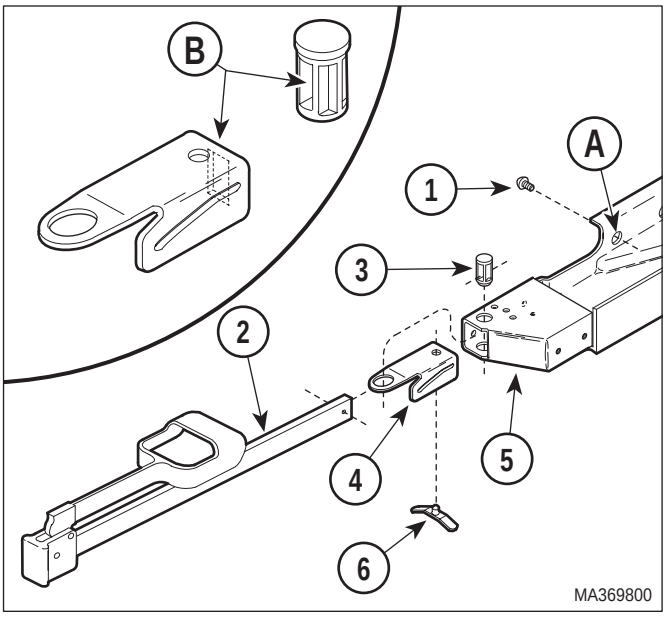

Figure 4-48. Stirrup Assembly Removal / Installation

B. Installation

(1) If removed, install stirrup index spring (6) on stirrup guide bracket (4).

(2) Install stirrup guide bracket (4) in stirrup mount weldment (5) and secure with pivot boss (3).

(3) Slide stirrup assembly (2) thru slots (B) in pivot boss (3) and stirrup guide bracket (4).

(4) Install screw (1) on stirrup assembly (2).

4.40 Foot Position Sensor Removal / Installation / Adjustment (Programmable Units Only)

A. Removal

(1) Lower FOOT DOWN function all the way down.

(2) Unplug table power cord from outlet receptacle.

(3) Remove upholstered seat (1, Figure 4-49) from seat board (2).

(4) Remove four screws (3) and seat board (2) from seat weldment (4).

(5) Pull treatment pan slide (5) all the way out.

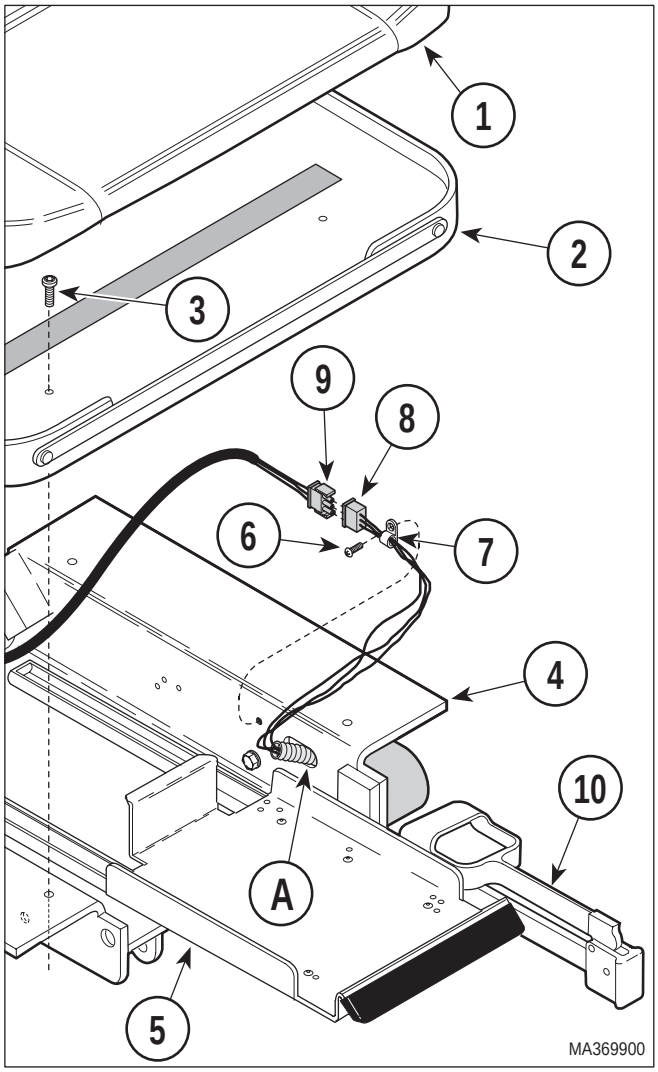

Figure 4-49. Foot Sensor Harness Disconnection / Connection

(6) Remove screw (6) and cable clamp (7) securing foot sensor harness (8) to seat weldment (4).

(7) Disconnect foot sensor harness (8) from harness (9).

(8) Extend L.H. stirrup (10).

(9) Remove one screw (1, Figure 4-50) and foot sensor cover (2) from position sensor mount (3).

(10) Using a T15 torx wrench, remove two screws (4), backing plate (5), and foot position sensor (6) from position sensor mount (3).

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(11) Remove 5/16” hex drive (7) from head of screw (8).

B. Installation

(1) Remove two screws (9, Figure 4-50) and PC board cover (10) from base casting (11).

NOTE
Use multimeter leads with testing hooks; it is very difficult to do with testing probes.

(2) Connect negative (black) lead of multimeter to TP4 (A, Figure 4-50) and positive (red) lead of multimeter to TP7 (B) on PC control board (12).

(3) Set multimeter to VDC setting. Then, set the voltage range of the multimeter to the 0-20 VDC range.

(4) Feed foot sensor harness (8, Figure 4-49) thru wire slot (A) in seat weldment (4).

(5) Connect foot sensor harness (8) to harness (9).

(6) Secure foot sensor harness (8) to seat weldment (4) with cable clamp (7) and screw (6).

(7) Push treatment pan slide (5) all the way into its stowed position.

(8) Plug table power cord into outlet receptacle.

(9) Raise FOOT UP function all the way up.

(10) Slide sensor holder tool (E, Figure 4-50) thru the center hole of foot position sensor (6).

(11) Insert 5/16” hex drive (7) into slot of sensor holder tool (E).

(12) Pull on holder sensor tool (E) until 5/16” hex drive (7) is engaged with foot position sensor (6). Then, rotate sensor holder tool slightly to apply friction on 5/16” hex drive and prevent it from “popping” out as foot position sensor is installed. The 5/16” hex drive is properly engaged when spring tension is felt as the sensor holder tool is rotated. Also, the multimeter should read approximately 0.5 to 0.7 VDC and the reading should change as the tool is rotated.

EQUIPMENT ALERT
Make sure the 5/16” hex drive remains in position in foot position sensor while foot position sensor is being installed. If hex drive does not stay fully seated in foot position sensor, the foot position sensor can be damaged.

(13) While applying slight rotational pressure and gentle back pressure on sensor holder tool (E) to keep 5/16” hex drive (7) in position, install foot position sensor (6) on position sensor mount (3). Move foot position sensor around as necessary while pushing foot position sensor inward until it is fully seated.

(14) Coat threads of two screws (4) with removable threadlocking adhesive (Loctite 242); then secure the foot position sensor (6) on position sensor mount (3) with backing plate (5) and two screws (4). Tighten screws very lightly, so that the foot position sensor may be rotated for adjustment, but do not let sensor pop out of mounting position.

(15) Pull sensor holder tool (E) from foot position sensor (6).

(16) Rotate foot position sensor (6) until multimeter reads approximately 0.50 VDC ± 0.2 VDC; then tighten two screws (4) to secure foot position sensor in place.

(17) Lower FOOT DOWN function all the way down (until it freewheels) while observing the multimeter reading; the reading should increase steadily during the table movement. If the voltage reading stops increasing before the actuator reaches its end of travel and freewheels, the foot position sensor (6) has reached the dead spot at the end of its range. If this happens, return to step 16 and readjust the foot position sensor as determined necessary to eliminate the dead spot.

(18) Press FOOT UP button for approximately 1/10 second and release (the minimum amount of time the button can be pressed and still have the table move slightly). Then, run FOOT UP

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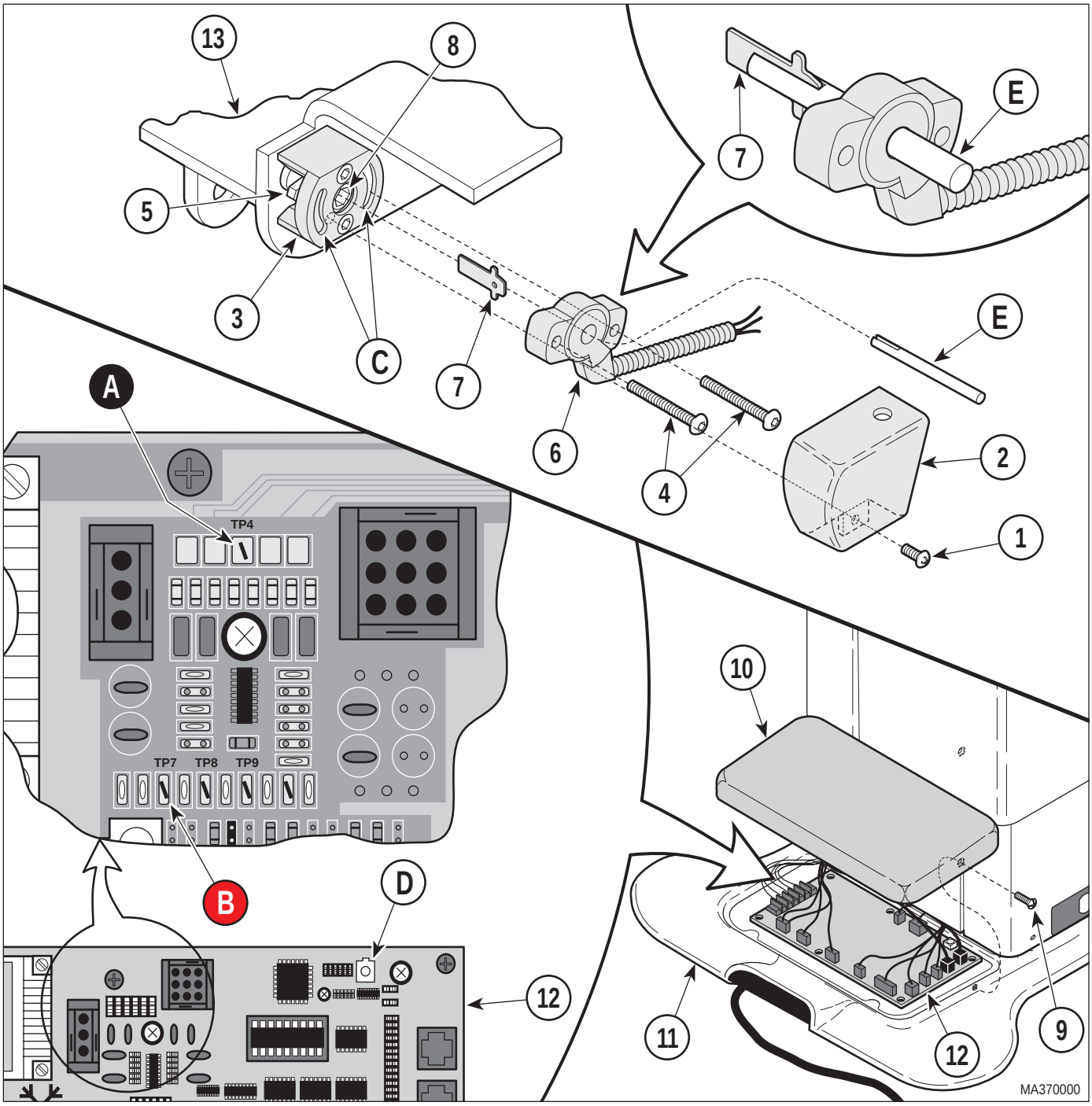

Figure 4-50. Foot Position Sensor Removal / Installation / Adjustment

function all the way up and repeat step using the FOOT DOWN button.

Observe. The multimeter reading should change slightly; if it doesn't change, then the foot position sensor (6) must be readjusted (it is in "dead spot" at end of travel).

(19) Raise the FOOT UP function all the way up (until foot actuator freewheels). The multimeter reading should be approximately 0.50 VDC ±0.2 VDC and no dead spot should be observed. If not, repeat entire procedure.

(20) Remove multimeter leads from TP4 (A) and TP7 (B) of PC control board (12).

(21) Install foot sensor cover (2) on seat weldment (13) and secure with screw (1).

(22) Slide L.H. stirrup (10, Figure 4-49) back into stowed position.

(23) Coat threads of four screws (3) with removable threadlocking adhesive (Loctite 242).

(24) Install seat board (2) on seat weldment (4) and secure with four screws (3).

(25) Install upholstered seat (1) on seat board (2).

(26) Unplug table power cord from outlet receptacle.

(27) Depress and hold the PROGRAM / FAULT CLEAR button (D, Figure 4-50) while simultaneously plugging the table power cord into the outlet receptacle.

Observe. The PROGRAM MODE lamp and the PAN OUT lamp of the hand control will illuminate and then go out.

(28) After the PROGRAM MODE lamp and PAN OUT lamp of the hand control go out, release the PROGRAM / FAULT CLEAR button (D).

Observe. After approximately 10 to 20 seconds, the PC control board (12) will sound three warning beeps to indicate the memory is cleared.

(29) Install PC board cover (10) on base casting (11) and secure with two screws (9).

(30) Calibrate the PC control board (Refer to para 4.2).

(31) Program the table and check for proper operation.

C. Adjustment Only

(1) Perform steps 8 thru 11 of para 4.40, Removal.

(2) Perform steps 1, 2, 3, 9 thru 22, and 26 thru 31 of para 4.40, Installation.

4.41 Tilt Position Sensor Removal / Installation / Adjustment (Programmable Units Only)

A. Removal

(1) Raise TABLE UP function all the way up.

(2) Remove four screws (1, Figure 4-51) and R.H. and L.H. outer shrouds (2) from column adapter weldment (3).

(3) Lower middle outer shroud assembly (4) down out of way.

(4) Remove two nuts (5) and sensor wire cover (6) from connection cover (7).

(5) Cut any cable ties (8) securing tilt sensor harness (9) to other harnesses.

(6) Disconnect tilt sensor harness (9) from harness (10).

(7) Raise TILT UP function all the way up.

(8) Using an offset phillips screwdriver, remove two screws (11) and tilt cover (12) from seat weldment (13).

(9) Lower TILT DOWN function all the way down.

(10) Raise BACK UP function all the way up.

(11) Unplug table power cord from outlet receptacle.

(12) Remove one screw (1, Figure 4-52) and tilt sensor cover (2) from column adapter weldment (3).

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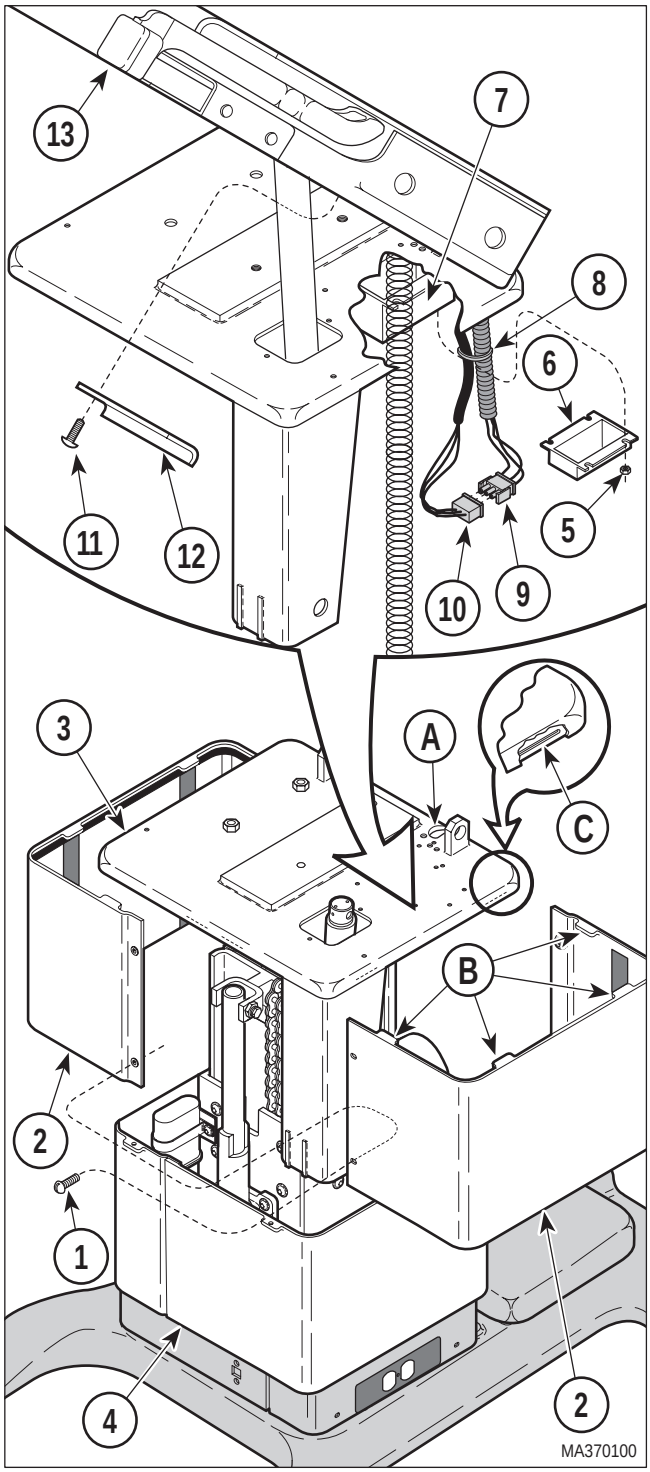

Figure 4-51. Tilt Sensor Harness Disconnection / Connection

(13) Using a T15 torx wrench, remove two screws (4), backing plate (5), and tilt position sensor (6) from position sensor mount (7).

(14) Remove 5/16" hex drive (8) from head of screw (9).

B. Installation

(1) Remove two screws (10, Figure 4-52) and PC board cover (11) from base casting (12).

NOTE
Use multimeter leads with testing hooks; it is very difficult to do with testing probes.

(2) Connect negative (black) lead of multimeter to TP4 (A, Figure 4-52) and positive (red) lead of multimeter to TP8 (B) of PC control board (13).

(3) Set multimeter to VDC setting. Then set the voltage range of the multimeter to the 0-20 VDC range.

(4) Feed tilt sensor harness (9, Figure 4-51) thru wire slot (A).

(5) Connect tilt sensor harness (9) to harness (10).

(6) Secure tilt sensor harness (9) to other harnesses with cable tie (8).

(7) Install sensor wire cover (6) on connection cover (7) and secure with two nuts (5), making sure harnesses (9 and 10) are tucked into the sensor wire cover.

(8) Install tabs (A) of R.H. and L.H. outer shrouds (2) in slots (B) column adapter weldment (3) and secure with four screws (1), making sure middle outer shroud assembly (4) is captured by R.H. and L.H. outer shrouds (2).

(9) Plug table power cord into outlet receptacle.

(10) Lower TILT DOWN function all the way DOWN.

(11) Slide sensor holder tool (E, Figure 4-52) thru the center hole of tilt position sensor (6).

(12) Insert 5/16" hex drive (8) into slot of sensor holder tool (E).

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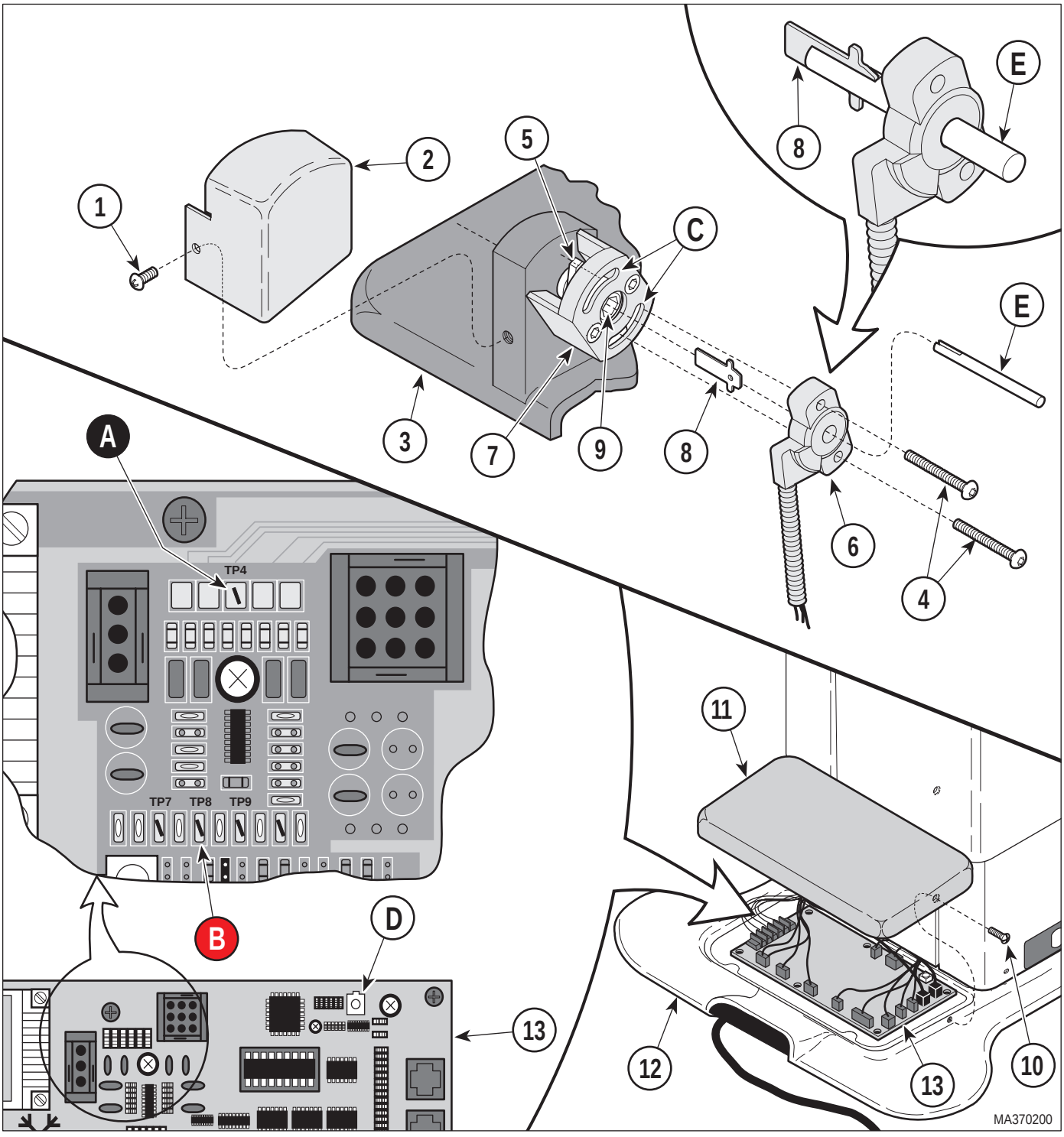

Figure 4-52. Tilt Position Sensor Removal / Installation / Adjustment

(13) Pull on holder sensor tool (E) until 5/16" hex drive (8) is engaged with tilt position sensor (6). Then, rotate sensor holder tool slightly to apply friction on 5/16" hex drive and prevent it from "popping" out as tilt position sensor is installed. The 5/16" hex drive is properly engaged when spring tension is felt as the sensor holder tool is rotated. Also, the multimeter should read approximately 0.04 to 0.08 VDC and the reading should change as the tool is rotated.

EQUIPMENT ALERT

Make sure the 5/16" hex drive remains in position in tilt position sensor while tilt position sensor is being installed. If hex drive does not stay fully seated in tilt position sensor, the tilt position sensor can be damaged.

(14) While applying slight rotational pressure and gentle back pressure on sensor holder tool (E) to keep 5/16" hex drive (8) in position, install tilt position sensor (6) on position sensor mount (7). Move tilt position sensor around as necessary while pushing tilt position sensor inward until it is fully seated.

(15) Coat threads of two screws (4) with removable threadlocking adhesive (Loctite 242); then secure the tilt position sensor (6) on position sensor mount (7) with backing plate (5) and two screws (4). Tighten screws very lightly, so that the tilt position sensor may be rotated for adjustment, but do not let sensor pop out of mounting position.

(16) Pull sensor holder tool (E) from tilt position sensor (6).

(17) Rotate tilt position sensor (6) until multimeter reads 0.05 VDC ± 0.01 VDC; then tighten two screws (4) to secure tilt position sensor in place.

(18) Raise TILT UP function all the way up (until tilt actuator freewheels) while observing the multimeter reading; the reading should increase steadily during the table movement. If the voltage reading stops increasing before the tilt actuator reaches its end of travel and freewheels, the tilt position sensor (6) has reached the dead spot at the end of its range. If this happens, return to step 17 and readjust the tilt position sensor as determined necessary to eliminate the dead spot.

(19) Press TILT DOWN button for approximately 1/10 second and release (the minimum amount of time the button can be pressed and still have the table move slightly). Then, run TILT DOWN function all the way down and repeat step using the TILT UP button.

Observe. The multimeter reading should change slightly; if it doesn't change, then the tilt position sensor (6) must be readjusted (it is in "dead spot" at end of travel).

(20) Lower the TILT DOWN function all the way down (until tilt actuator freewheels). The multimeter reading should be approx. 0.05 VDC ±0.01 VDC and no dead spot should be observed. If not, repeat entire procedure.

(21) Remove multimeter leads from TP4 (A) and TP8 (B) of PC control board (13).

(22) Install tilt sensor cover (2) on column adapter weldment (3) and secure with screw (1).

(23) Unplug table power cord from outlet receptacle.

(24) Depress and hold the PROGRAM / FAULT CLEAR button (D) while simultaneously plugging the table power cord into the outlet receptacle.

Observe. The PROGRAM MODE lamp and the PAN OUT lamp of the hand control will illuminate and then go out.

(25) After the PROGRAM MODE lamp and PAN OUT lamp of the hand control go out, release the PROGRAM / FAULT CLEAR button (D).

Observe. After approximately 10 to 20 seconds, the PC control board (13) will sound three warning beeps to indicate the memory is cleared.

(26) Install PC board cover (11) on base casting (12) and secure with two screws (10).

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(27) Using an offset phillips screwdriver, install tilt cover (12, Figure 4-44) on seat weldment (13) and secure with two screws (11).

(28) Calibrate the PC control board (Refer to para 4.2).

(29) Program the table and check for proper operation.

C. Adjustment Only

(1) Perform steps 7 thru 14 of para 4.41, Removal.

(2) Perform steps 1, 2, 3 and 9 thru 29 of para 4.41, Installation.

4.42 Back Position Sensor Removal / Installation / Adjustment (Programmable Units Only)

A. Removal

(1) Raise BACK UP function all the way up.

(2) Unplug table power cord from outlet receptacle.

(3) Remove upholstered seat (1, Figure 4-53) from seat board (2).

(4) Remove four screws (3) and seat board (2) from seat weldment (4).

(5) Cut cable tie (5) securing back sensor harness (6) to seat weldment (4).

(6) Disconnect back sensor harness (6) from harness (7).

(7) Remove one screw (1, Figure 4-54) and back sensor cover (2) from seat weldment (3).

(8) Using a T15 torx wrench, remove two screws (4), backing plate (5), and back position sensor (6) from position sensor mount (7).

(9) Pull back sensor harness (A) out of slot (B).

(10) Remove 5/16” hex drive (8) from head of screw (9).

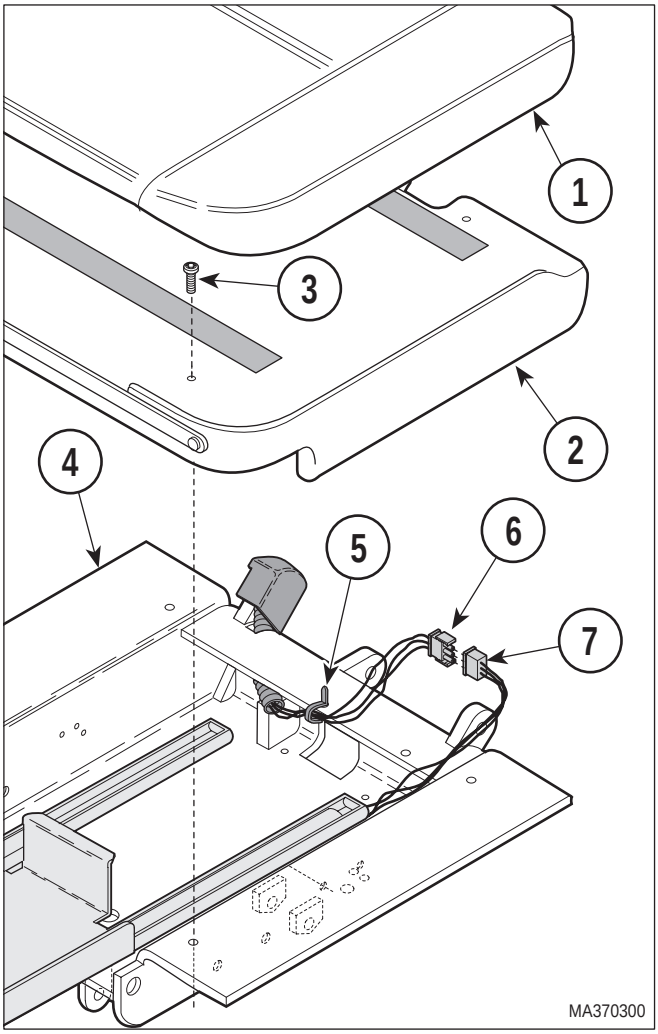

Figure 4-53. Back Sensor Harness Disconnection / Connection

B. Installation

(1) Remove two screws (10, Figure 4-54) and PC board cover (11) from base casting (12).

NOTE
Use multimeter leads with testing hooks; it is very difficult to do with testing probes.

(2) Connect negative (black) lead of multimeter to TP4 (C, Figure 4-54) and positive (red) lead of multimeter to TP9 (D) of PC control board (13).

(3) Set multimeter to VDC setting. Then set the voltage range of the multimeter to the 0-20 VDC range.

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(4) Feed back sensor harness (A) thru wire slot (B) in seat weldment (3).

(5) Connect back sensor harness (6, Figure 4-53) to harness (7).

(6) Secure back sensor harness (6) to seat weldment (4) with cable tie (5).

(7) Coat threads of four screws (3) with removable threadlocking adhesive (Loctite 242).

(8) Install seat board (2) on seat weldment (4) and secure with four screws (3).

(9) Install upholstered seat (1) and seat board (2).

(10) Plug table power cord into outlet receptacle.

(11) Lower BACK DOWN function all the way down.

(12) Slide sensor holder tool (G, Figure 4-54) thru the center hole of back position sensor (6).

(13) Insert 5/16" hex drive (8) into slot of sensor holder tool (G).

(14) Pull on holder sensor tool (G) until 5/16" hex drive (8) is engaged with back position sensor (6). Then, rotate sensor holder tool slightly to apply friction on 5/16" hex drive and prevent it from "popping" out as back position sensor is installed. The 5/16" hex drive is properly engaged when spring tension is felt as the sensor holder tool is rotated. Also, the multimeter should read approximately 0.5 to 0.7 VDC and the reading should change as the tool is rotated.

EQUIPMENT ALERT

Make sure the 5/16" hex drive remains in position in back position sensor while back position sensor is being installed. If hex drive does not stay fully seated in back position sensor, the back position sensor can be damaged.

(15) While applying slight rotational pressure and gentle back pressure on sensor holder tool (G) to keep 5/16" hex drive (8) in position, install back position sensor (6) on position sensor mount (7). Move back position sensor around as necessary while pushing back position sensor inward until it is fully seated.

(16) Coat threads of two screws (4) with removable threadlocking adhesive (Loctite 242); then secure the back position sensor (6) on position sensor mount (7) with backing plate (5) and two screws (4). Tighten screws very lightly, so that the back position sensor may be rotated for adjustment, but do not let sensor pop out of mounting position.

(17) Pull sensor holder tool (G) from back position sensor (6).

(18) Rotate back position sensor (6) until multimeter reads approximatley 0.50 VDC ± 0.2 VDC; then tighten two screws (4) to secure back position sensor in place.

(19) Raise BACK UP function all the way up (until it freewheels) while observing the multimeter reading; the reading should increase steadily during the table movement. If the voltage reading stops increasing before the actuator reaches its end of travel and freewheels, the back position sensor (6) has reached the dead spot at the end of its range. If this happens, return to step 18 and readjust the back position sensor as determined necessary to eliminate the dead spot.

(20) Press BACK DOWN button for approximately 1/10 second and release (the minimum amount of time the button can be pressed and still have the table move slightly). Then, run BACK DOWN function all the way down and repeat step using the BACK UP button.

Observe. The multimeter reading should change slightly; if it doesn't change, then the back position sensor (6) must be readjusted (it is in "dead spot" at end of travel).

(21) Lower the BACK DOWN function all the way down (until back actuator freewheels). The multimeter reading should be approximately 0.50 VDC ±0.2 VDC and no dead spot should be observed. If not, repeat entire procedure.

(22) Remove multimeter leads from TP4 (C) and TP9 (D) of PC control board (13).

(23) Raise BACK UP function all the way up.

(24) Install back sensor cover (2) on seat weldment (3) and secure with screw (1).

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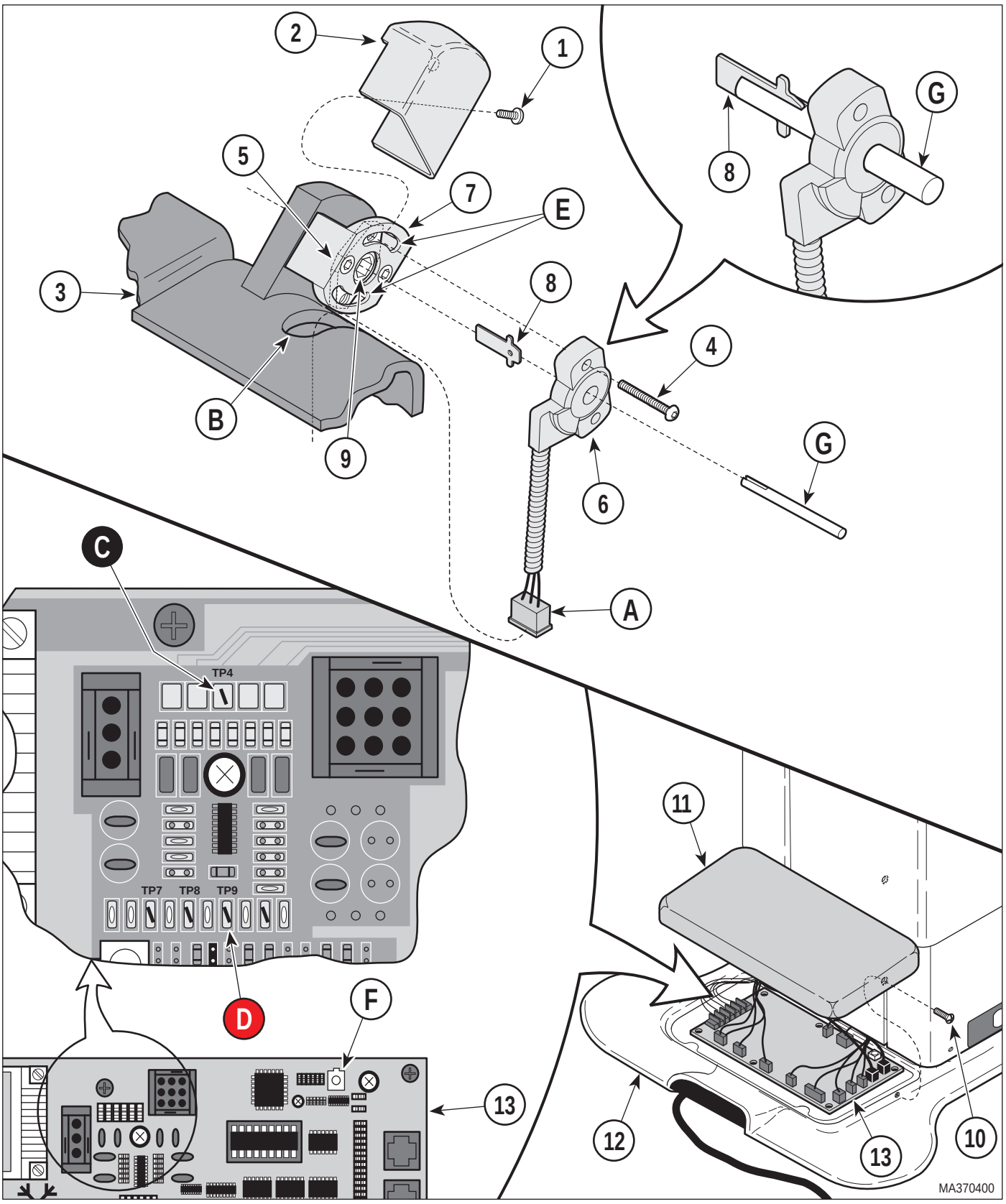

Figure 4-54. Back Position Sensor Removal / Installation / Adjustment

(25) Unplug table power cord from outlet receptacle.

(26) Depress and hold the PROGRAM / FAULT CLEAR button (F) while simultaneously plugging the table power cord into the outlet receptacle.

Observe. The PROGRAM MODE lamp and the PAN OUT lamp of the hand control will illuminate and then go out.

(27) After the PROGRAM MODE lamp and PAN OUT lamp of the hand control go out, release the PROGRAM / FAULT CLEAR button (F).

Observe. After approximately 10 to 20 seconds, the PC control board (13) will sound three warning beeps to indicate the memory is cleared.

(28) Install PC board cover (11) on base casting (12) and secure with two screws (10).

(29) Calibrate the PC control board (Refer to para 4.2).

(30) Program the table and check for proper operation.

C. Adjustment Only

(1) Perform steps 1, 2, 7, 8, and 10 of para 4.42, Removal.

(2) Perform steps 1, 2, 3 and 10 thru 30 of para 4.42, Installation.

4.43 Base Position Sensor Removal / Installation / Adjustment (Programmable Units Only)

A. Removal

(1) Raise TABLE UP function all the way up.

(2) Unplug table power cord from outlet receptacle.

(3) Remove four screws (1, Figure 4-55) and R.H. and L.H. outer shrouds (2) from column adapter weldment (3).

(4) Remove four screws (4) and R.H. and L.H. middle shrouds (5).

(5) Disconnect one modular cord (6) from each inlet PC board (7).

(6) Remove four screws (8), four screws (9), two screws (10), two receptacle label plates (11), and partially remove R.H. and L.H. inner shrouds (12) from base casting (13).

(7) Cut cable tie (1, Figure 4-56) securing base sensor harness (2) to capacitor strap (3).

(8) Disconnect base sensor harness (2) from harness (4).

(9) While holding cable (5), remove two screws (6) and cable clamp (7) from cable bracket (8).

(10) Unloop end of cable (5) from around grommet bumper (9) and then slowly release tension from cable.

(11) Remove two screws (10) and base reducer assembly (11) from column assembly (12).

DANGER
Use care when removing the torsion spring. The torsion spring is under tension and can become a projectile if not controlled. Failure to do so could result in serious personal injury to face or eyes.

(12) Remove circular push-on (1, Figure 4-57) and torsion spring (2) from gear shaft (3).

(13) Remove two screws (4) and base position sensor (5) from gear shaft (3).

B. Installation

(1) Remove two screws (13, Figure 4-56) and PC board cover (14) from base casting (15).

NOTE
Use multimeter leads with testing hooks; it is very difficult to do with testing probes.

(2) Connect negative (black) lead of multimeter to TP4 (A, Figure 4-56) and positive (red) lead of multimeter to Test Point (B) of PC control board (16).

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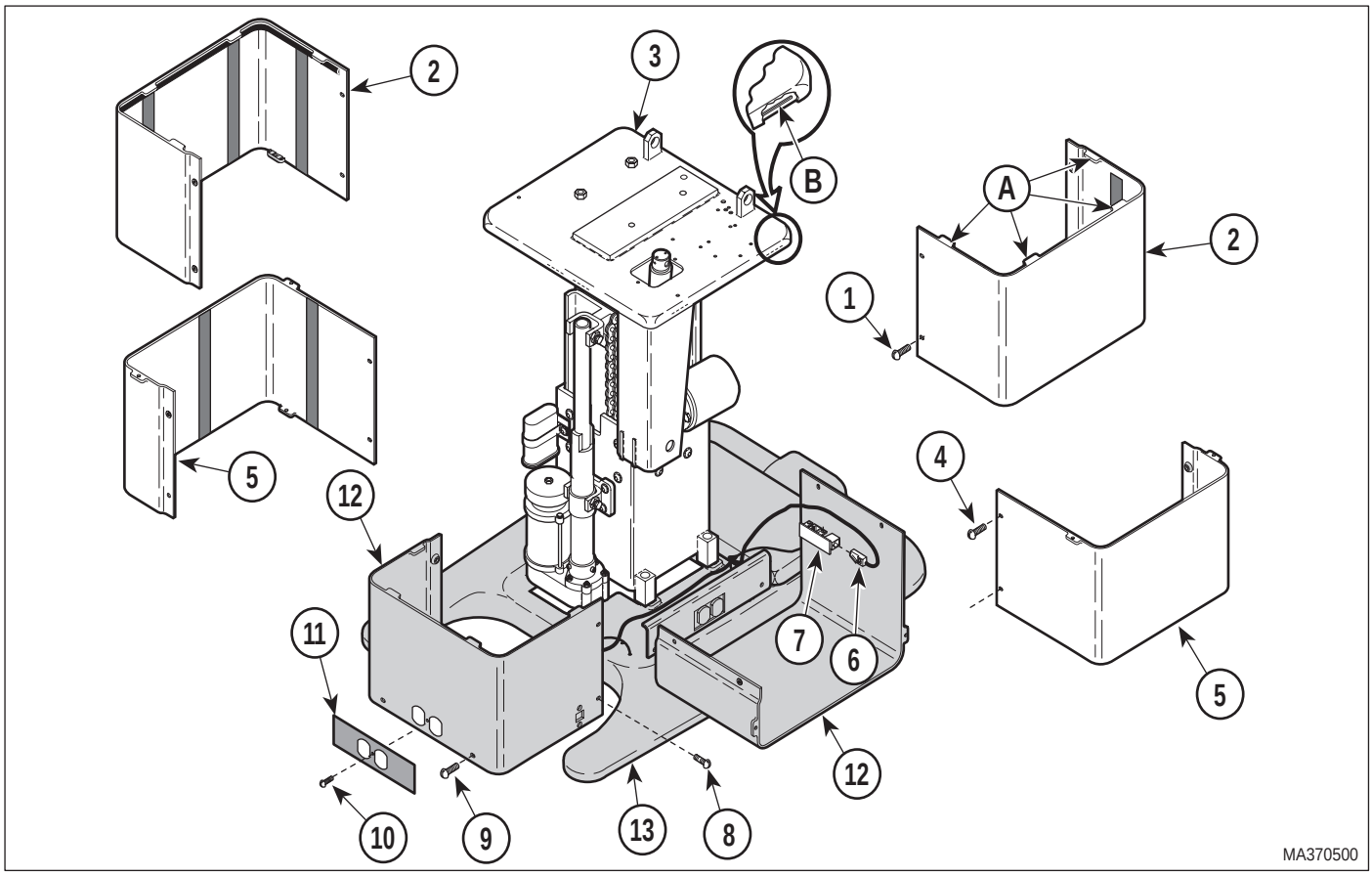

Figure 4-55. Base Shrouds Removal / Installation

(3) Set multimeter to VDC setting. Then set the voltage range of the multimeter to the 0-20 VDC range.

(4) Coat threads of two screws (4, Figure 4-57) with removable threadlocking adhesive (Loctite 242).

(5) Install base position sensor (5) on gear shaft (3) and secure with two screws (4).

(6) Install torsion spring (2) in slot (A) on end of gear shaft (3) while pushing tab (B) of torsion spring under head of screw (4).

(7) Secure torsion spring (2) on gear shaft (3) with circular push-on (1).

(8) If installing new cable (6), loosen screw (7) and remove old cable. Then, wrap one end of new cable (6) around screw (7) 1-1/2 times and secure in this place by tightening screw. Cut off any excess cable (6).

(9) Install base reducer assembly (11, Figure 4-56) on column assembly (12) and secure with two screws (10).

(10) Rotate pulley (8, Figure 4-57) in a clockwise direction until resistance is met. Then, check position of screw (7); it should be ± 30° of the position shown on illustration. If not, remove screw (9), remove and rotate pulley (8) to correct orientation, and then reinstall with screw (9).

(11) Connect base sensor harness (2, Figure 4-56) to harness (4).

(12) Secure base sensor harness (2) to capacitor strap (3) with a cable tie (1).

(13) Plug table power cord into outlet receptacle.

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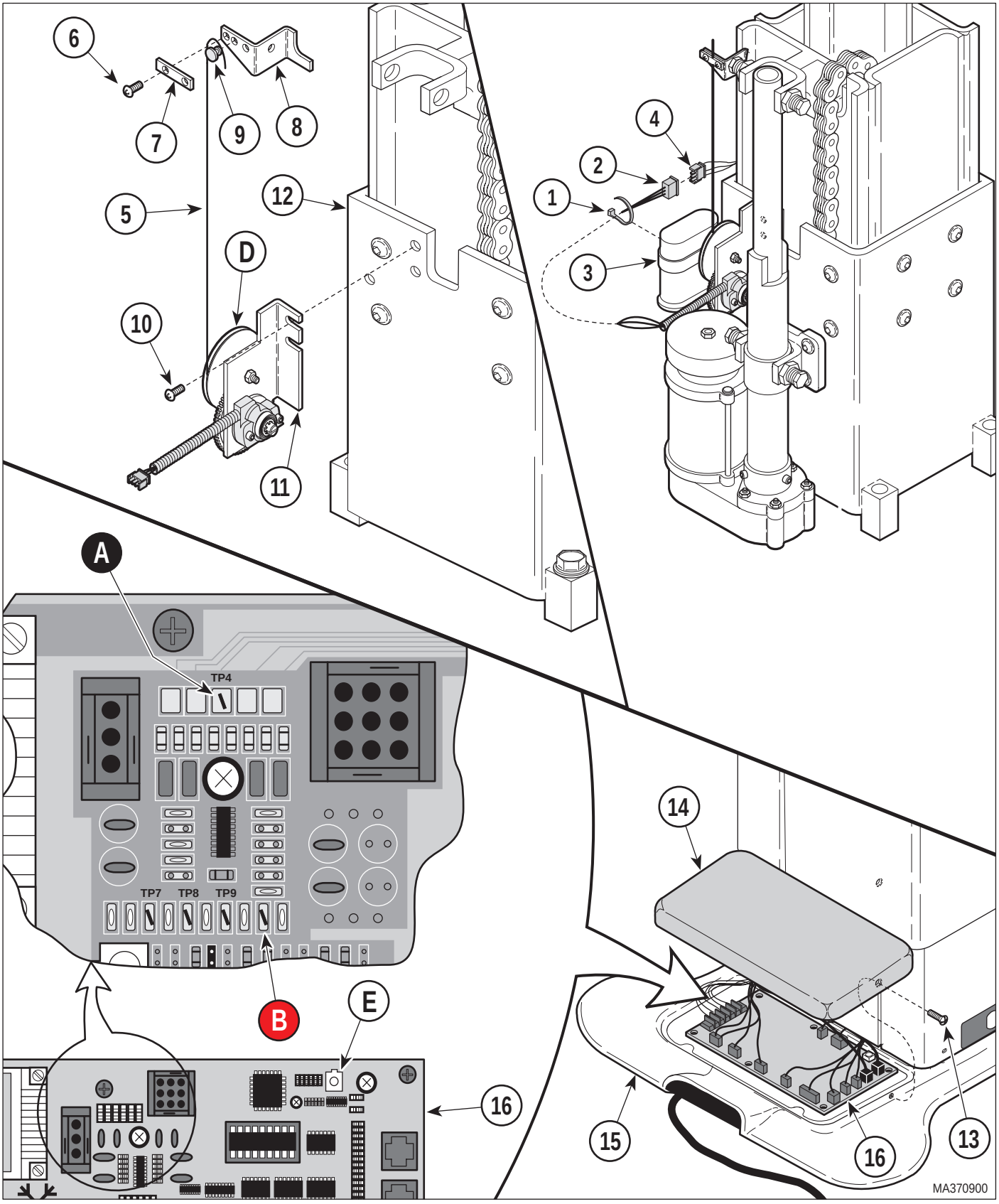

Figure 4-56. Base Reducer Assembly Removal / Installation

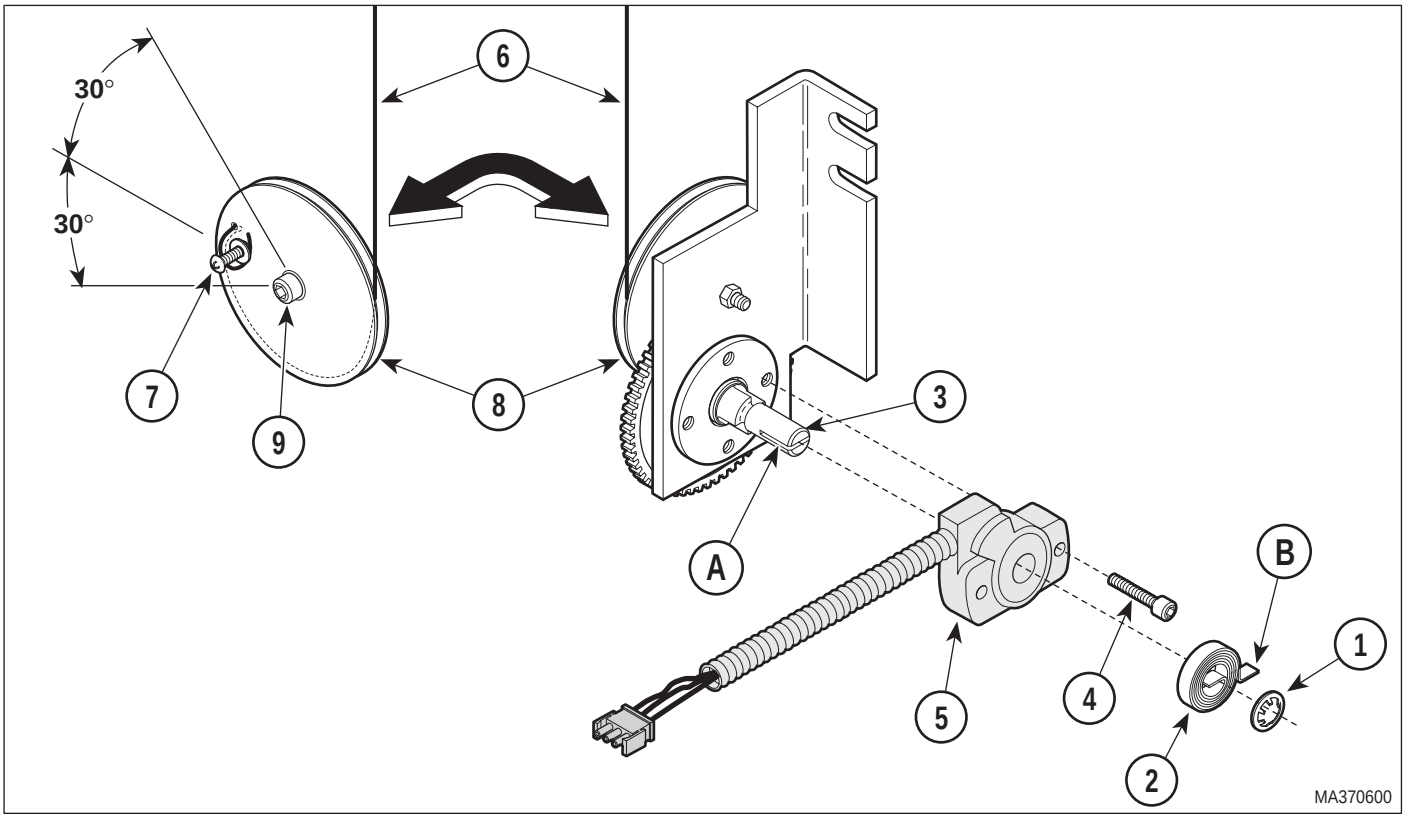

Figure 4-57. Base Position Sensor Removal / Insallation

(14) Wrap cable (5) around pulley (D) three times in direction shown.

NOTE
The TABLE UP function must be completely raised before performing the following step.

(15) While observing the multimeter reading, wrap free end of cable (5) around grommet bumper (9). Continue to pull cable until multimeter reading does not change (base position sensor is saturated- approximately 4.61 VDC.)

(16) Slowly release cable (5) until the voltage reading starts to decrease (base position sensor is no longer in saturation - approximately 4.58 VDC). Then, making sure cable (5) is wrapped around grommet bumper 1-1/2 times, secure cable on grommet bumper by installing cable clamp (7) and two screws (6).

(17) Lower TABLE DOWN function all the way down (until base down limit switch stops the base actuator) while observing the multimeter reading; the reading should decrease steadily during the table movement. If the voltage reading stops decreasing before the base actuator is stopped by the base down limit switch, the base position sensor was installed incorrectly, the cable (5) is loose, or the base position sensor has reached a dead spot at the end of its range. If this happens, return to step 16 and readjust the base position sensor as determined necessary to eliminate the dead spot.

(18) Raise the TABLE UP function all the way Up (until base down limit switch stops the base actuator). The multimeter reading should be match the reading observed in step 16 and no dead spot should be observed. If not, repeat entire procedure.

(19) Cut off any excess cable (5) length.

(20) Install R.H. and L.H. inner shrouds (12, Figure 4-48) on base casting (13) and secure with two receptacle label plates (11), two screws (10), four screws (9), and four screws (8).

(21) Connect one modular cord (6) to each inlet PC board (7).

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(22) Assemble R.H. and L.H. middle shrouds (5) around inner shrouds (12) with four screws (4).

(23) Install tabs (A) of R.H. and L.H. outer shrouds (12) in slots (B) of column adapter weldment (3) and secure with four screws (1), making sure middle outer shroud assembly (5) is captured by R.H. and L.H. outer shrouds (2).

(24) Remove multimeter leads from TP4 (A) and Test Point (B) of PC control board (16).

(25) Unplug table power cord from outlet receptacle.

(26) Depress and hold the PROGRAM / FAULT CLEAR button (E, Figure 4-56) while simultaneously plugging the table power cord into the outlet receptacle.

Observe. The PROGRAM MODE lamp and the PAN OUT lamp of the hand control will illuminate and then go out.

(27) After the PROGRAM MODE lamp and PAN OUT lamp of the hand control go out, release the PROGRAM / FAULT CLEAR button (E).

Observe. After approximately 10 to 20 seconds, the PC control board (16) will sound three warning beeps to indicate the memory is cleared.

(28) Install PC board cover (14) on base casting (15) and secure with two screws (13).

(29) Calibrate the PC control board (Refer to para 4.2).

(30) Program the table and check for proper operation.

C. Adjustment

(1) Perform steps 1 thru 6 of para 4.43, Removal.

(2) Loosen two screws (6, Figure 4-56).

(3) Perform steps 1, 2, 3 and 15 thru 30 of para 4.43, Installation.

4.44 Fuse Removal / Installation (Applies To Units With Serial Numbers: HY1000 & HZ1000 thru Present)

A. Removal

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Using a flat-bladed screwdriver, press in on fuse cap (1, FIgure 4-58) and rotate counterclockwise 1/4 turn; then pull fuse cap from fuse holder (2).

(2) Remove fuse (3) from fuse cap (1).

B. Installation

(1) Insert fuse (3) into fuse cap (1).

(2) Using a flat-bladed screwdriver, insert fuse cap (1) into fuse holder (2) and rotate clockwise 1/4 turn.

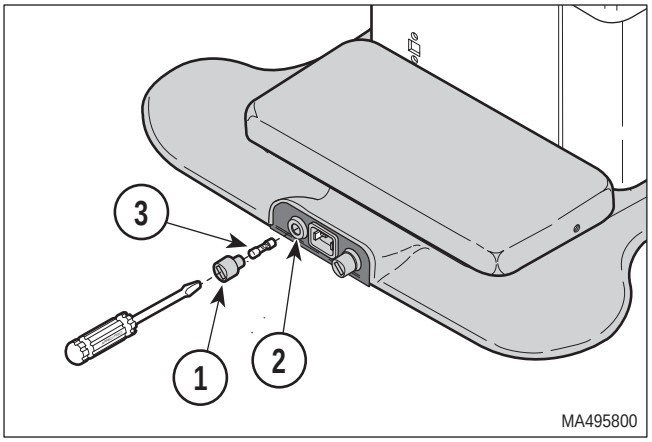

Figure 4-58. Fuse Removal / Installation

4.45 AC Receptacle Removal / Installation (Applies To Units With Serial Numbers: HY1000 & HZ1000 thru Present)

A. Removal

WARNING
Always disconnect the power cord from the outlet receptacle before removing any of the table's covers/shrouds or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Remove two screws (1, Figure 4-59) and PC board cover (2) from base casting (3).

(2) Loosen two terminal screws (4); then tag and disconnect two wires (5) from terminals of PC board (6).

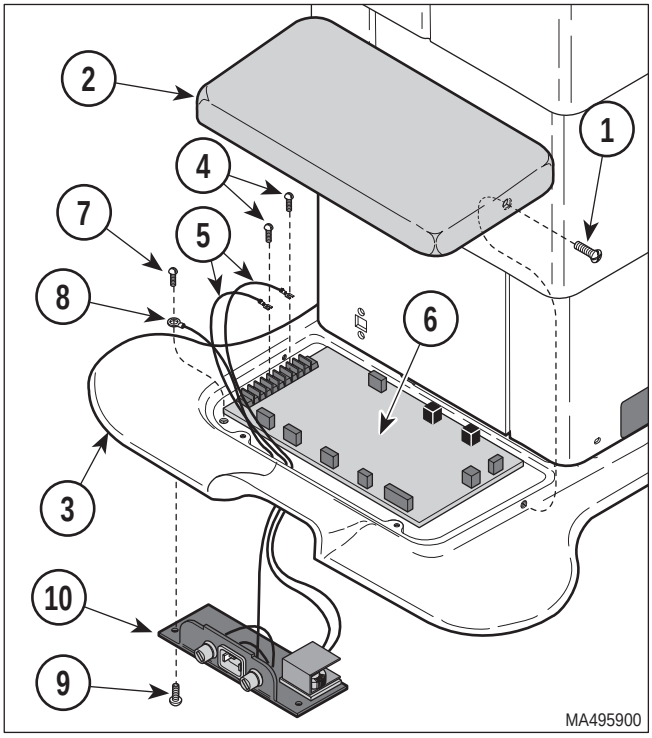

Figure 4-59. Power Inlet Bracket Removal / Installation

(3) Remove screw (7) and ground wire (8) from base casting (3).

WARNING
The table weighs 515 lbs. (233 kgs). You will need an assistant to perform the following step. Failure to comply could result in serious personal injury or back strain

EQUIPMENT ALERT
Remove any accessories attatched to the table. Failure to comply could result in damage to the accessories or the table.

(4) Lay table on its side.

(5) Remove two screws (9) and power inlet bracket (10) from bottom of base casting (3).

(6) Tag and disconnect two wires (1, Figure 4-60) and ground wire (2) from terminals of AC receptacle (3).

(7) Depress tabs (A); then remove AC receptacle (3) from power inlet bracket (4).

B. Installation

(1) Insert AC receptacle (3) thru hole in power inlet bracket (4); then push inward until it locks into place.

(2) Connect two wires (1) and ground wire (2) to proper terminals of AC receptacle (3).

(3) Install power inlet bracket (10, Figure 4-59) on bottom of base casting (3) and secure with two screws (9).

WARNING
The table weighs 515 lbs. (233 kgs). You will need an assistant to perform the following step. Failure to comply could result in serious personal injury or back strain

(4) Stand table upright.

(5) Secure ground wire (8) to base casting (3) with screw (7).

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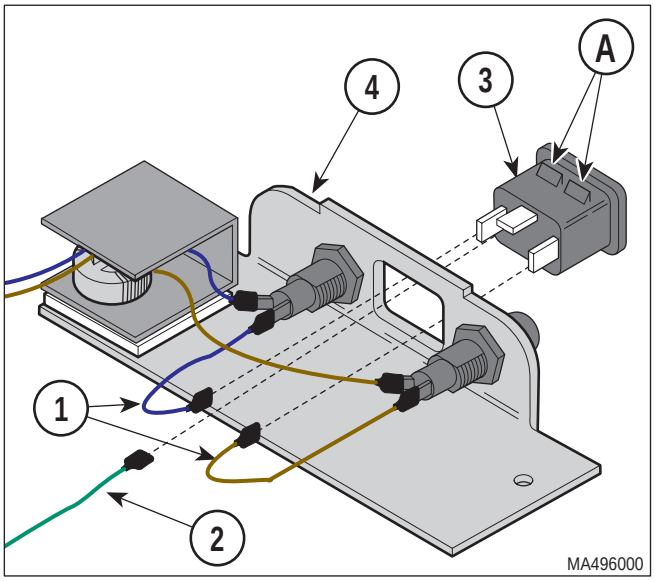

Figure 4-60. AC Receptacle Removal / Installation

(6) Connect two wires (5) to proper terminals of PC board (6) and secure by tightening two terminal screws (4).

(7) Install PC board cover (2) on base casting (3) and secure with two screws (1).

4.46 Fuse Holder Removal / Installation (Applies To Units With Serial Numbers: HY1000 & HZ1000 thru Present)

A. Removal

(1) Remove power inlet bracket. (Refer to: Removal - steps 1 thru 5 of para 4.45).

(2) Tag and disconnect two wires (1, Figure 4-61) from terminals of fuse holder (2).

(3) Remove nut (3), lockwasher (4), and fuse holder (2) from power inlet bracket (5).

(4) Remove gasket (6) from fuse holder (2).

B. Installation

(1) Install gasket (6) on fuse holder (2).

(2) Insert fuse holder (2) thru hole in power inlet bracket (5) and secure with lockwasher (4) and nut (3).

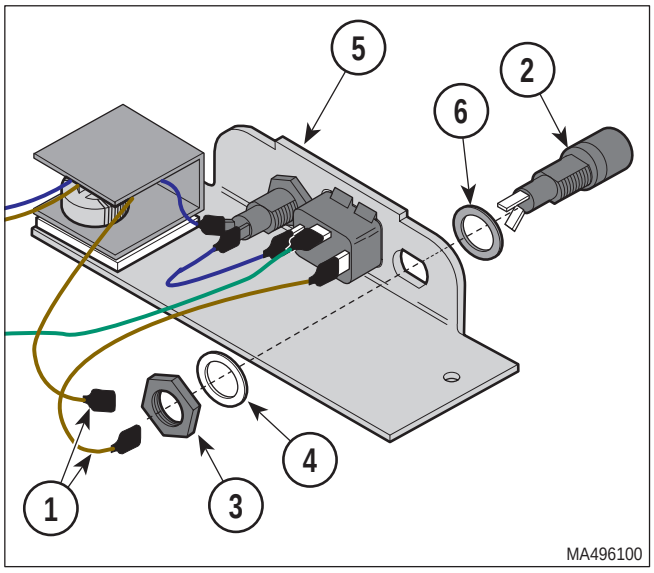

Figure 4-61. Fuse Holder Removal / Installation

(3) Connect two wires (1) to terminals of fuse holder (2).

(4) Install power inlet bracket. (Refer to: Installation - steps 3 thru 7 of para 4.45).

4.47 Choke Assembly Inlet Harness Removal / Installation (Applies To Units With Serial Numbers: HZ1000 thru Present)

A. Removal

(1) Remove power inlet bracket. (Refer to: Removal - steps 1 thru 5 of para 4.45).

NOTE
Be sure to tag all wires before removing. Use tagged wires for reference when installing new choke assembly.

(2) Tag and disconnect two wires (1, Figure 4-62) from terminals of two fuse holders (2) and AC receptacle (3).

(3) Tag and disconnect two wires (4) from terminals of two fuse holders (2).

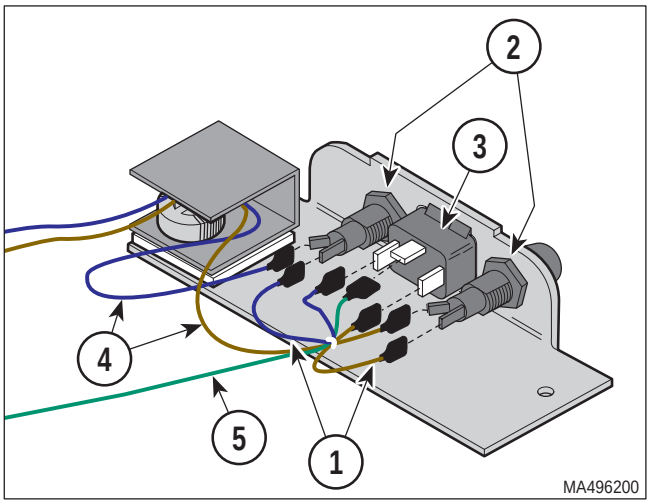

Figure 4-62. Choke Assembly Inlet Harness Connection / Disconnection

(4) Tag and disconnect ground wire (5) from AC receptacle (3).

EQUIPMENT ALERT
When rotating choke mount, be sure fish-paper insulator remains in place. Failure to do so could allow choke assembly to contact power inlet bracket resulting in blown fuse(s).

(5) Rotate choke mount (1, Figure 4-63) clockwise 90°.

(6) Cut two wire ties (2) and remove choke assembly (3).

B. Installation

NOTE
Position choke assembly on choke mount to ensure proper alignment of wires after choke mount is rotated counter-clockwise 90°.

(1) Secure choke assembly (3) to choke mount (1) using two wire ties (2).

EQUIPMENT ALERT
When rotating choke mount, be sure fish-paper insulator remains in place. Failure to do so could allow choke assembly to contact power inlet bracket resulting in blown fuse(s).

(2) Rotate choke mount (1) counter-clockwise 90°.

(3) Connect two wires (1, Figure 4-62) to proper terminals of two fuse holders (2) and AC receptacle (3).

(4) Connect two wires (4) and ground wire (5) to terminals of AC receptacle (3).

(5) Install power inlet bracket. (Refer to: Installation - steps 3 thru 7 of para 4.45).

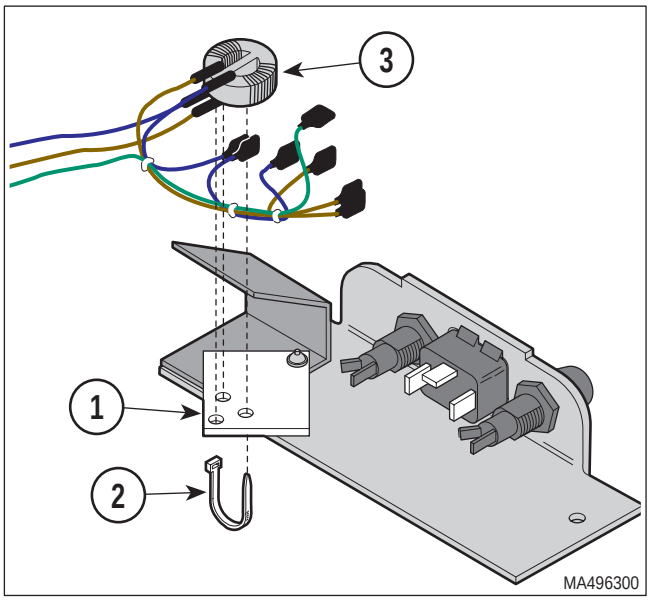

Figure 4-63. Choke Assembly Inlet Harness Removal / Installation

SECTION V
SCHEMATICS AND DIAGRAMS

5.1 Electrical Schematics / Wiring Diagrams

Figure 5-1 through Figure 5-10 illustrate the logic / current flow between the electrical components in the 411 (75L) Series Power Examination Table.

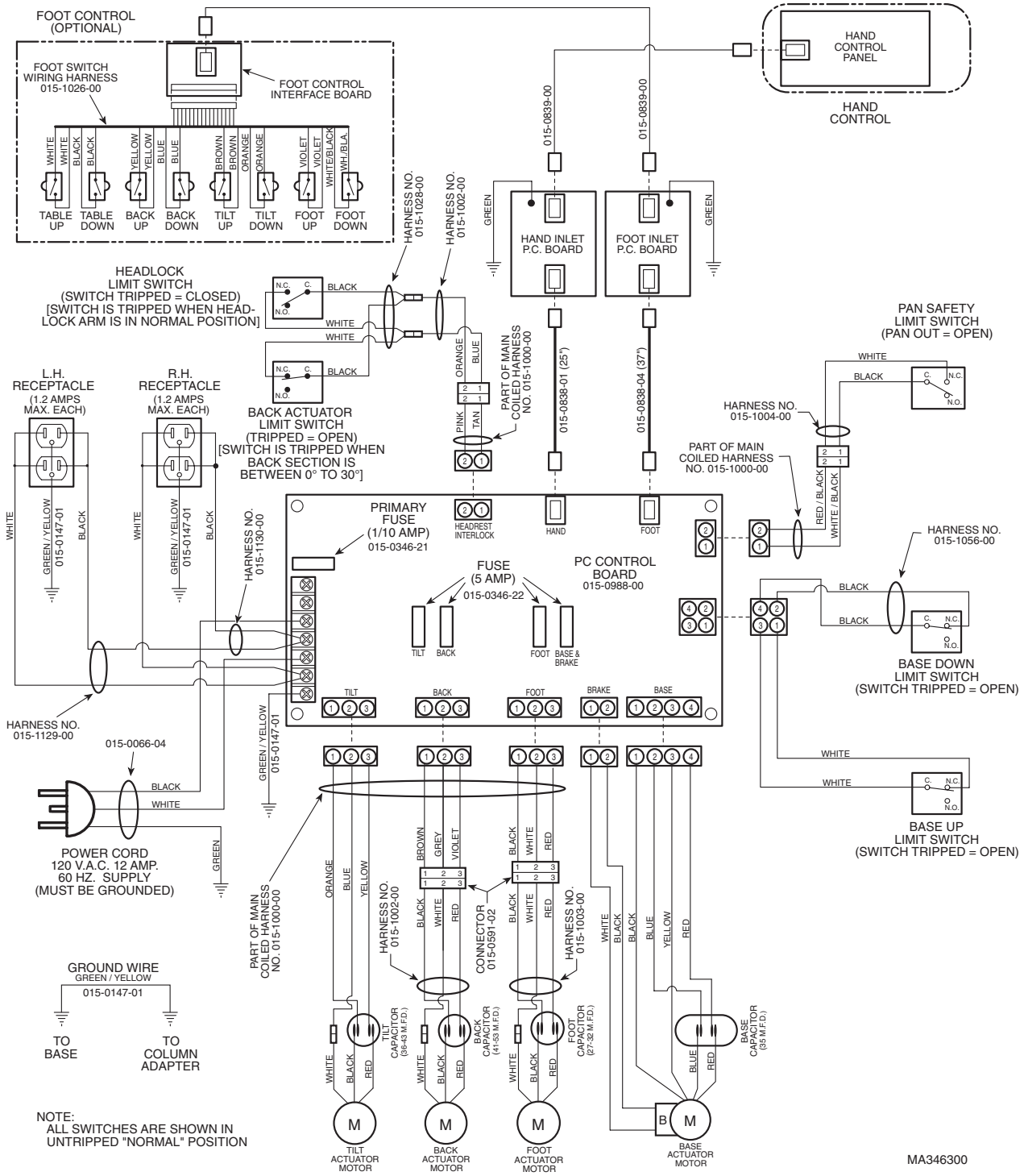
FOOT CONTROL (OPTIONAL)
FOOT SWITCH WIRING HARNESS 015-1026-00
FOOT CONTROL INTERFACE BOARD
TABLE UP
TABLE DOWN
BACK UP
BACK DOWN
TILT UP
TILT DOWN
FOOT UP
FOOT DOWN
HAND CONTROL PANEL
HAND CONTROL
015-0839-00
HARNESS NO. 015-1028-00
HARNESS NO. 015-1002-00
HAND INLET P.C. BOARD
FOOT INLET P.C. BOARD
HEADLOCK LIMIT SWITCH (SWITCH TRIPPED = CLOSED) [SWITCH IS TRIPPED WHEN HEAD-LOCK ARM IS IN NORMAL POSITION]
BACK ACTUATOR LIMIT SWITCH (TRIPPED = OPEN) [SWITCH IS TRIPPED WHEN BACK SECTION IS BETWEEN 0° TO 30°]
PART OF MAIN COILED HARNESS NO. 015-1000-00
015-0838-01 (25")
015-0838-04 (37")
PAN SAFETY LIMIT SWITCH (PAN OUT = OPEN)
HARNESS NO. 015-1004-00
PART OF MAIN COILED HARNESS NO. 015-1000-00
L.H. RECEPTACLE (1.2 AMPS MAX. EACH)
R.H. RECEPTACLE (1.2 AMPS MAX. EACH)
PRIMARY FUSE (1/10 AMP) 015-0346-21
HEADREST INTERLOCK
HAND
FOOT
FUSE (5 AMP) 015-0346-22
PC CONTROL BOARD 015-0988-00
HARNESS NO. 015-1130-00
HARNESS NO. 015-1056-00
BASE DOWN LIMIT SWITCH (SWITCH TRIPPED = OPEN)
BASE UP LIMIT SWITCH (SWITCH TRIPPED = OPEN)
HARNESS NO. 015-1129-00
015-0066-04
POWER CORD 120 V.A.C. 12 AMP. 60 HZ. SUPPLY (MUST BE GROUNDED)
GREEN / YELLOW 015-0147-01
PART OF MAIN COILED HARNESS NO. 015-1000-00
HARNESS NO. 015-1002-00
CONNECTOR 015-0591-02
HARNESS NO. 015-1003-00
GROUND WIRE GREEN / YELLOW 015-0147-01
TO BASE
TO COLUMN ADAPTER
TILT CAPACITOR (36-43 M.F.D.)
BACK CAPACITOR (41-53 M.F.D.)
FOOT CAPACITOR (27-32 M.F.D.)
BASE CAPACITOR (35 M.F.D.)
TILT ACTUATOR MOTOR
BACK ACTUATOR MOTOR
FOOT ACTUATOR MOTOR
BASE ACTUATOR MOTOR
NOTE: ALL SWITCHES ARE SHOWN IN UNTRIPPED "NORMAL" POSITION
MA346300

Figure 5-1. 115 VAC Non-Programmable Table Electrical Schematic / Wiring Diagram (411-011) Used on Units with Serial Numbers GT1000 thru GT2266

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SECTION V
SCHEMATICS AND DIAGRAMS

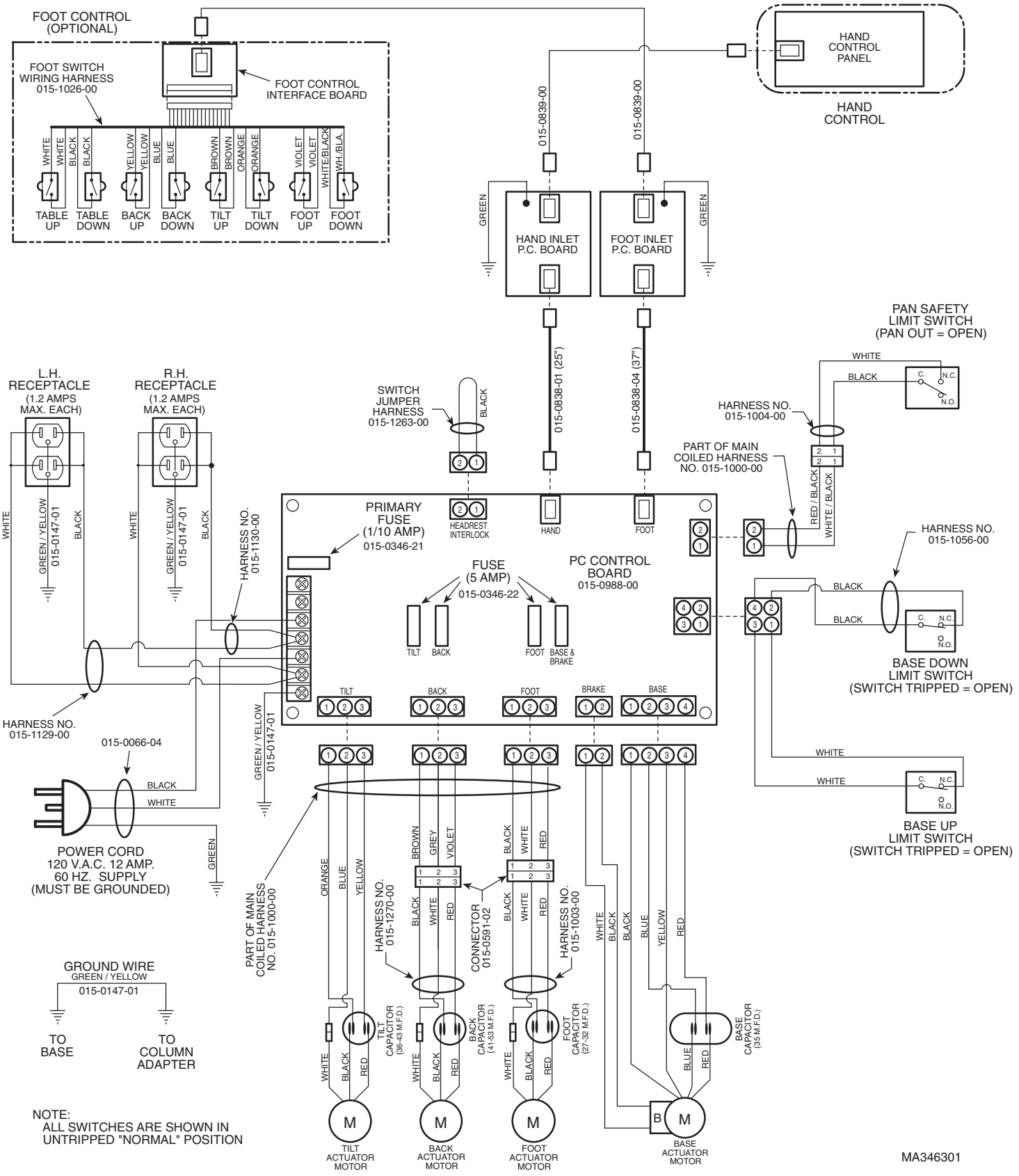

Figure 5-1.1 115 VAC Non-Programmable Table Electrical Schematic / Wiring Diagram (411-011)
Used on Units with Serial Numbers GT2267 thru Present

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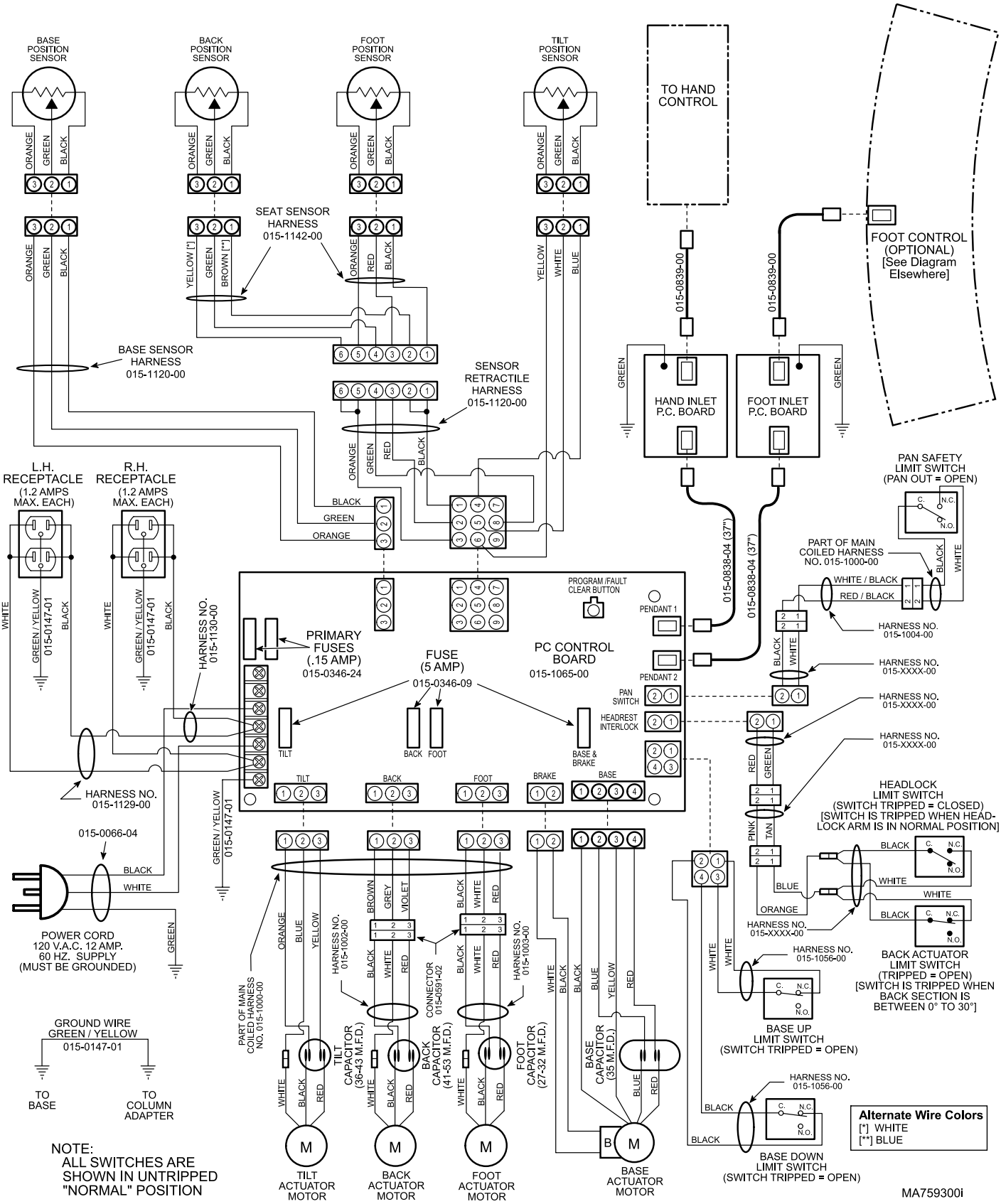
BASE POSITION SENSOR
BACK POSITION SENSOR
FOOT POSITION SENSOR
TILT POSITION SENSOR
TO HAND CONTROL
FOOT CONTROL (OPTIONAL) [See Diagram Elsewhere]
015-0839-00
SEAT SENSOR HARNESS 015-1142-00
BASE SENSOR HARNESS 015-1120-00
SENSOR RETRACTILE HARNESS 015-1120-00
HAND INLET P.C. BOARD
FOOT INLET P.C. BOARD
L.H. RECEPTACLE (1.2 AMPS MAX. EACH)
R.H. RECEPTACLE (1.2 AMPS MAX. EACH)
015-0838-04 (37")
PAN SAFETY LIMIT SWITCH (PAN OUT = OPEN)
PART OF MAIN COILED HARNESS NO. 015-1000-00
WHITE / BLACK
RED / BLACK
HARNESS NO. 015-1004-00
HARNESS NO. 015-XXXX-00
PROGRAM /FAULT CLEAR BUTTON
PENDANT 1
PENDANT 2
PRIMARY FUSES (.15 AMP) 015-0346-24
FUSE (5 AMP) 015-0346-09
PC CONTROL BOARD 015-1065-00
PAN SWITCH
HEADREST INTERLOCK
HARNESS NO. 015-1130-00
HARNESS NO. 015-1129-00
015-0066-04
POWER CORD 120 V.A.C. 12 AMP. 60 HZ. SUPPLY (MUST BE GROUNDED)
HEADLOCK LIMIT SWITCH (SWITCH TRIPPED = CLOSED) [SWITCH IS TRIPPED WHEN HEAD-LOCK ARM IS IN NORMAL POSITION]
BACK ACTUATOR LIMIT SWITCH (TRIPPED = OPEN) [SWITCH IS TRIPPED WHEN BACK SECTION IS BETWEEN 0° TO 30°]
HARNESS NO. 015-1056-00
BASE UP LIMIT SWITCH (SWITCH TRIPPED = OPEN)
BASE DOWN LIMIT SWITCH (SWITCH TRIPPED = OPEN)
HARNESS NO. 015-1002-00
HARNESS NO. 015-1003-00
CONNECTOR 015-0591-02
TILT CAPACITOR (36-43 M.F.D.)
BACK CAPACITOR (41-53 M.F.D.)
FOOT CAPACITOR (27-32 M.F.D.)
BASE CAPACITOR (35 M.F.D.)
PART OF MAIN COILED HARNESS NO. 015-1000-00
GROUND WIRE GREEN / YELLOW 015-0147-01
TO BASE
TO COLUMN ADAPTER
TILT ACTUATOR MOTOR
BACK ACTUATOR MOTOR
FOOT ACTUATOR MOTOR
BASE ACTUATOR MOTOR
Alternate Wire Colors
[*] WHITE
[**] BLUE
NOTE: ALL SWITCHES ARE SHOWN IN UNTRIPPED "NORMAL" POSITION
MA759300i

Figure 5-2. 115 VAC Programmable Table Electrical Schematic / Wiring Diagram (411-012)
Used on Units with Serial Numbers GV1000 thru GV1456

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SECTION V
SCHEMATICS AND DIAGRAMS

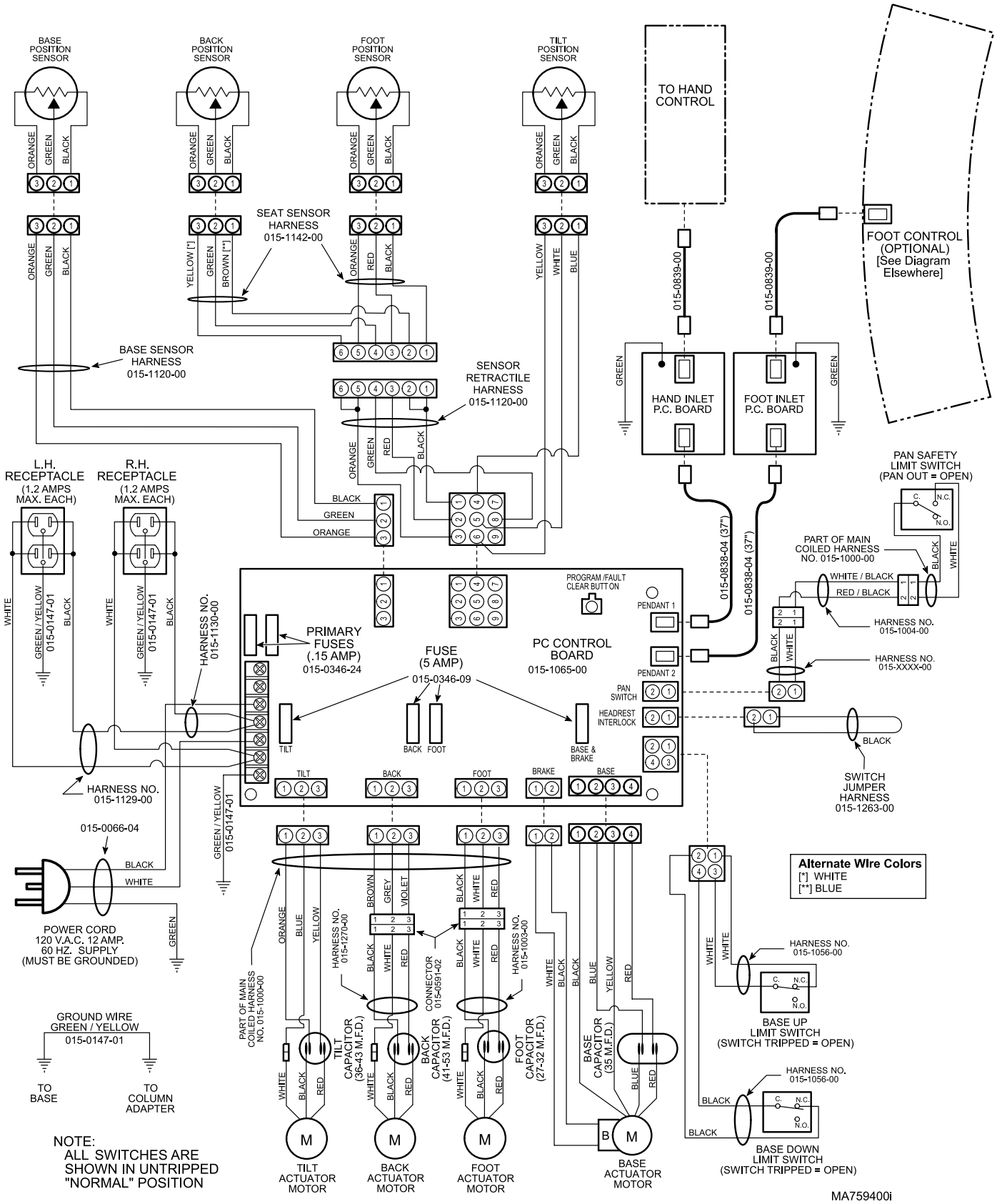

Figure 5-2.1 115 VAC Programmable Table Electrical Schematic / Wiring Diagram (411-012)
Used on Units with Serial Numbers GV1457 thru Present

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SECTION V
SCHEMATICS AND DIAGRAMS

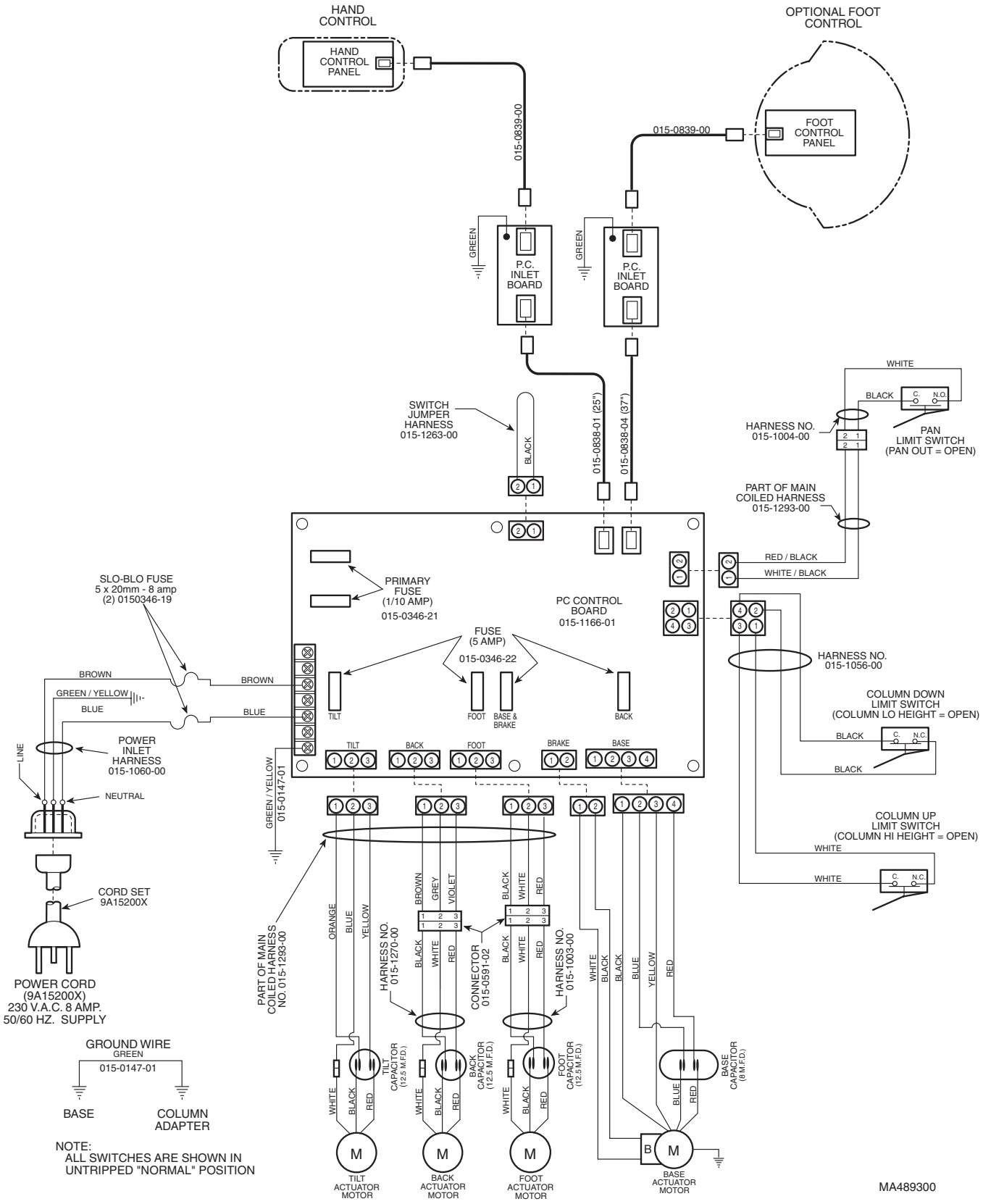

Figure 5-3. 230 VAC Non-Programmable Table Electrical Schematic / Wiring Diagram (411-013)
Used on Units with Serial Numbers HY1000 thru HY1046

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SECTION V
SCHEMATICS AND DIAGRAMS

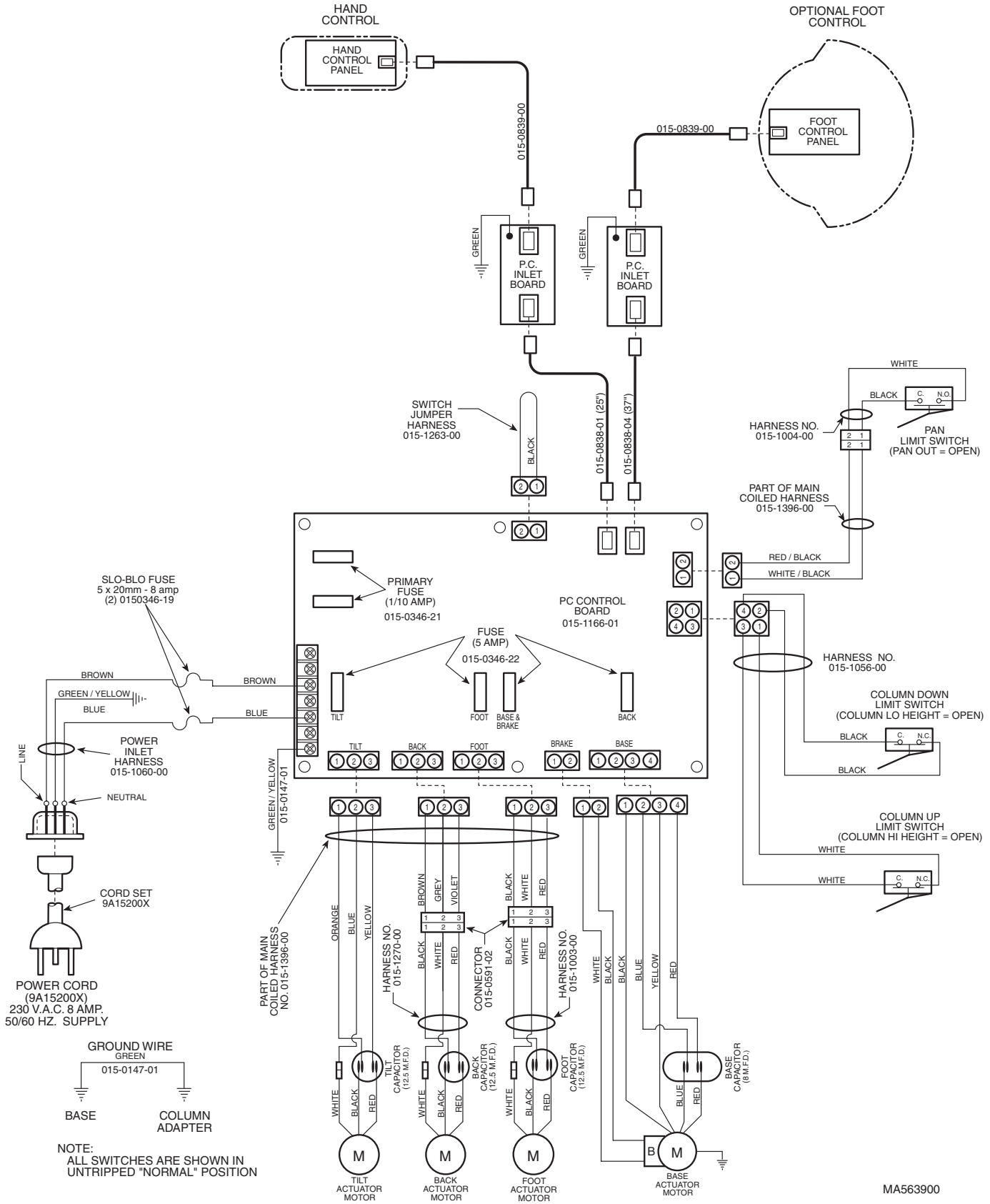

Figure 5-3.1 230 VAC Non-Programmable Table Electrical Schematic / Wiring Diagram (411-013)
Used on Units with Serial Numbers HY1047 thru Present

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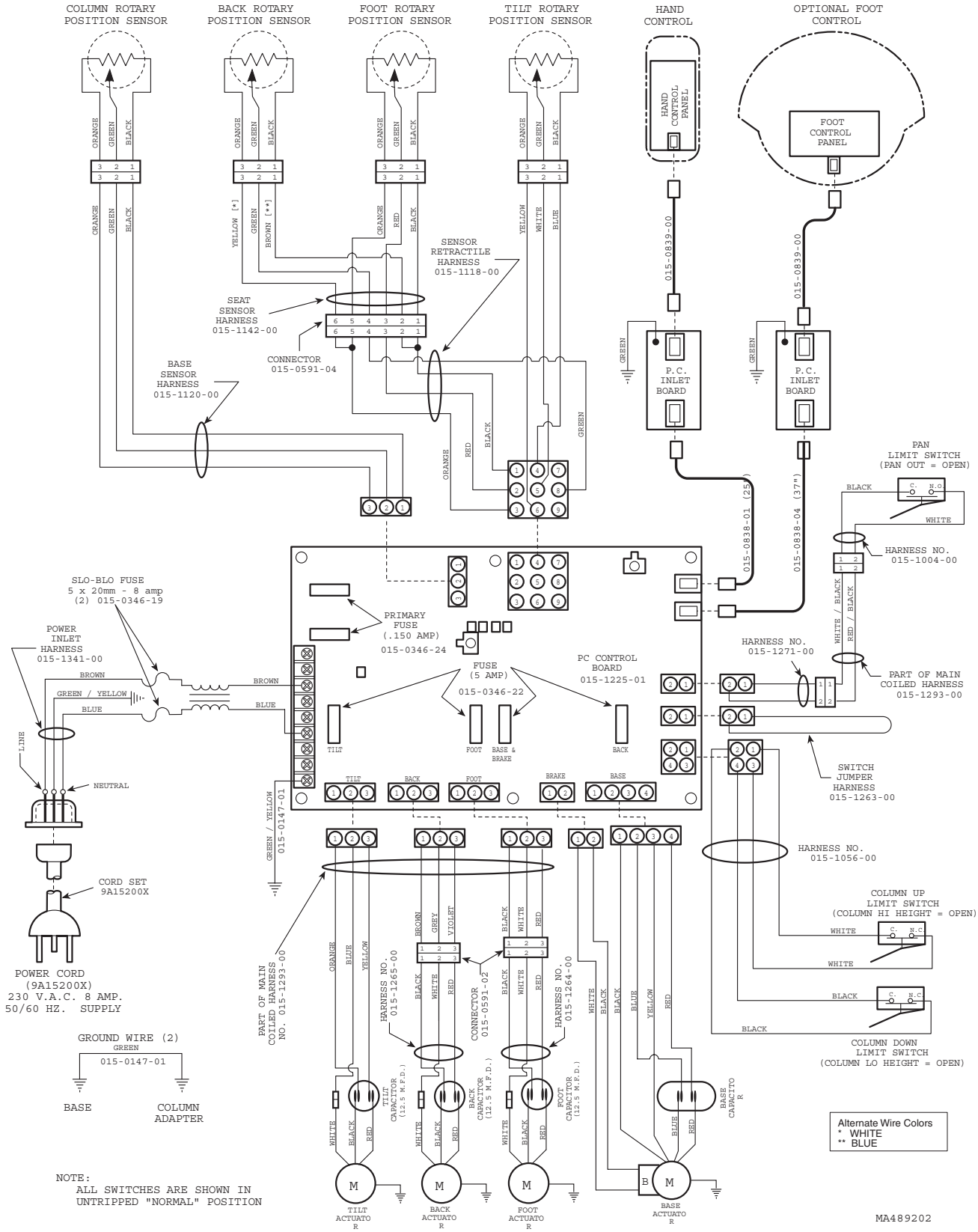

Figure 5-4. 230 VAC Programmable Table Electrical Schematic / Wiring Diagram (411-014)
Used on Units with Serial Numbers HZ1000 thru HZ1068

SECTION V
SCHEMATICS AND DIAGRAMS

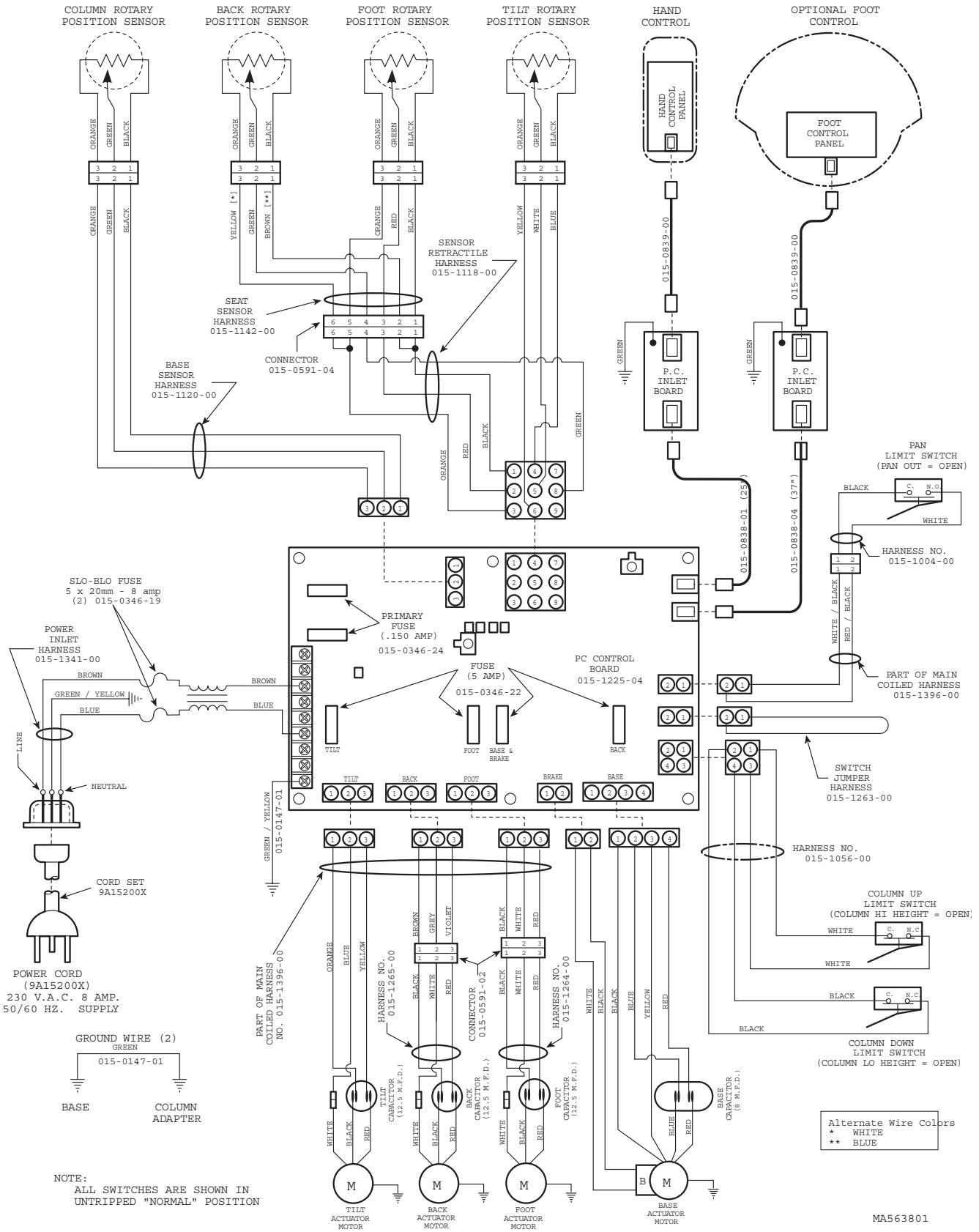

Figure 5-4.1 230 VAC Programmable Table Electrical Schematic / Wiring Diagram (411-014)
Used on Units with Serial Numbers HZ1069 thru HZ1071

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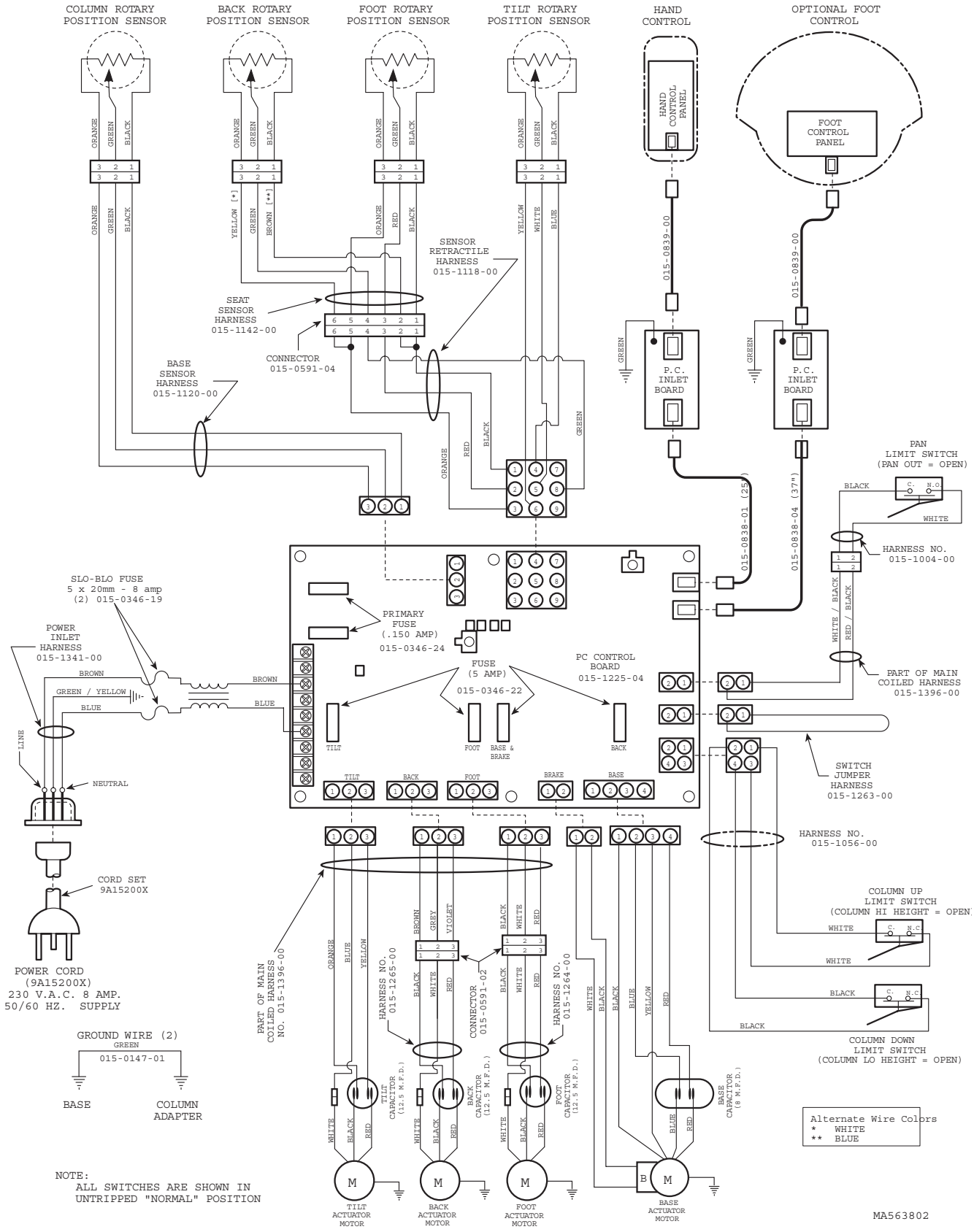

Figure 5-4.2 230 VAC Programmable Table Electrical Schematic / Wiring Diagram (411-014)
Used on Units with Serial Numbers HZ1072 thru Present

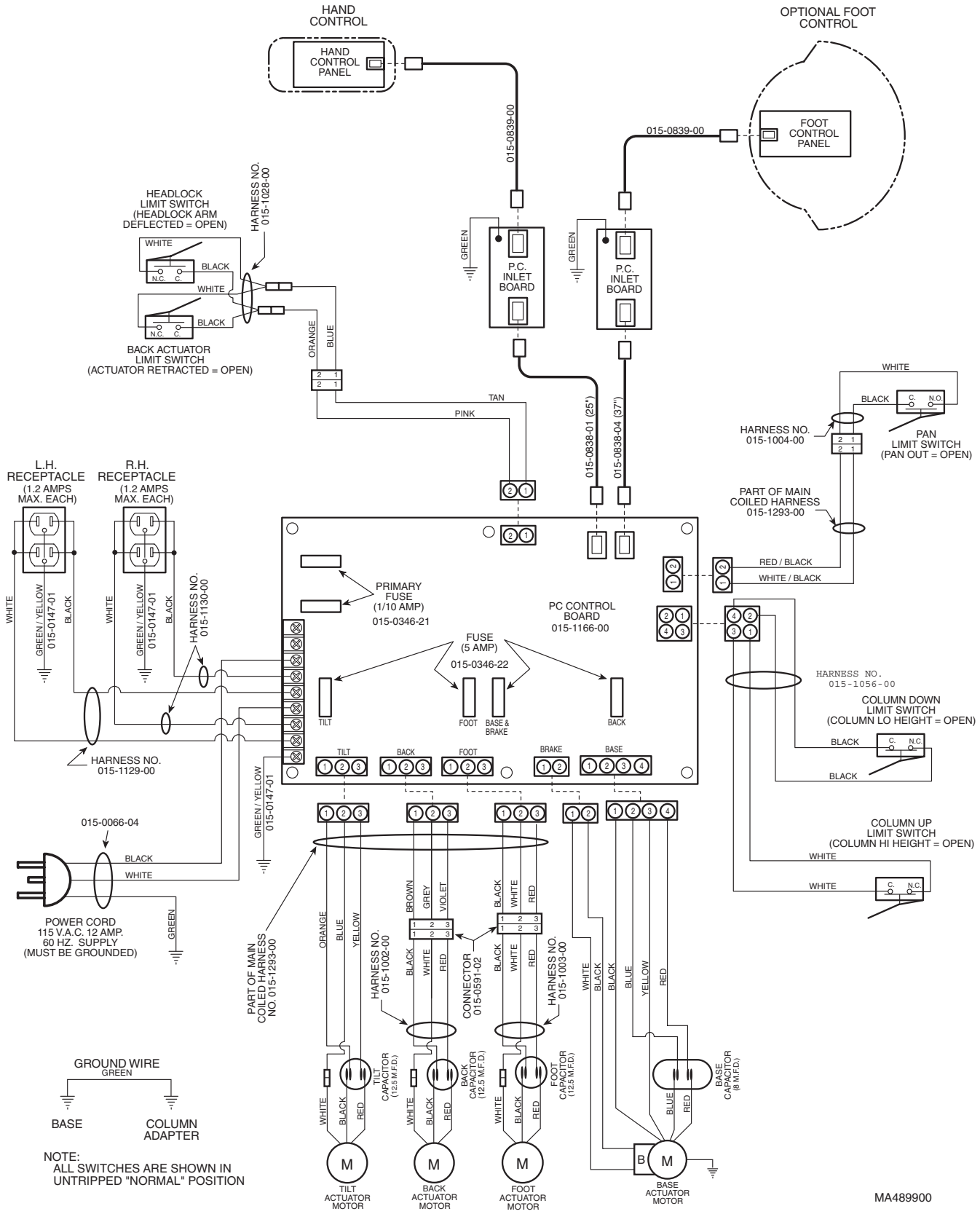

Figure 5-5. 115 VAC Non-Programmable Table Electrical Schematic / Wiring Diagram (411-016)
Used on Units with Serial Numbers JX1000 thru JX4502

SECTION V
SCHEMATICS AND DIAGRAMS

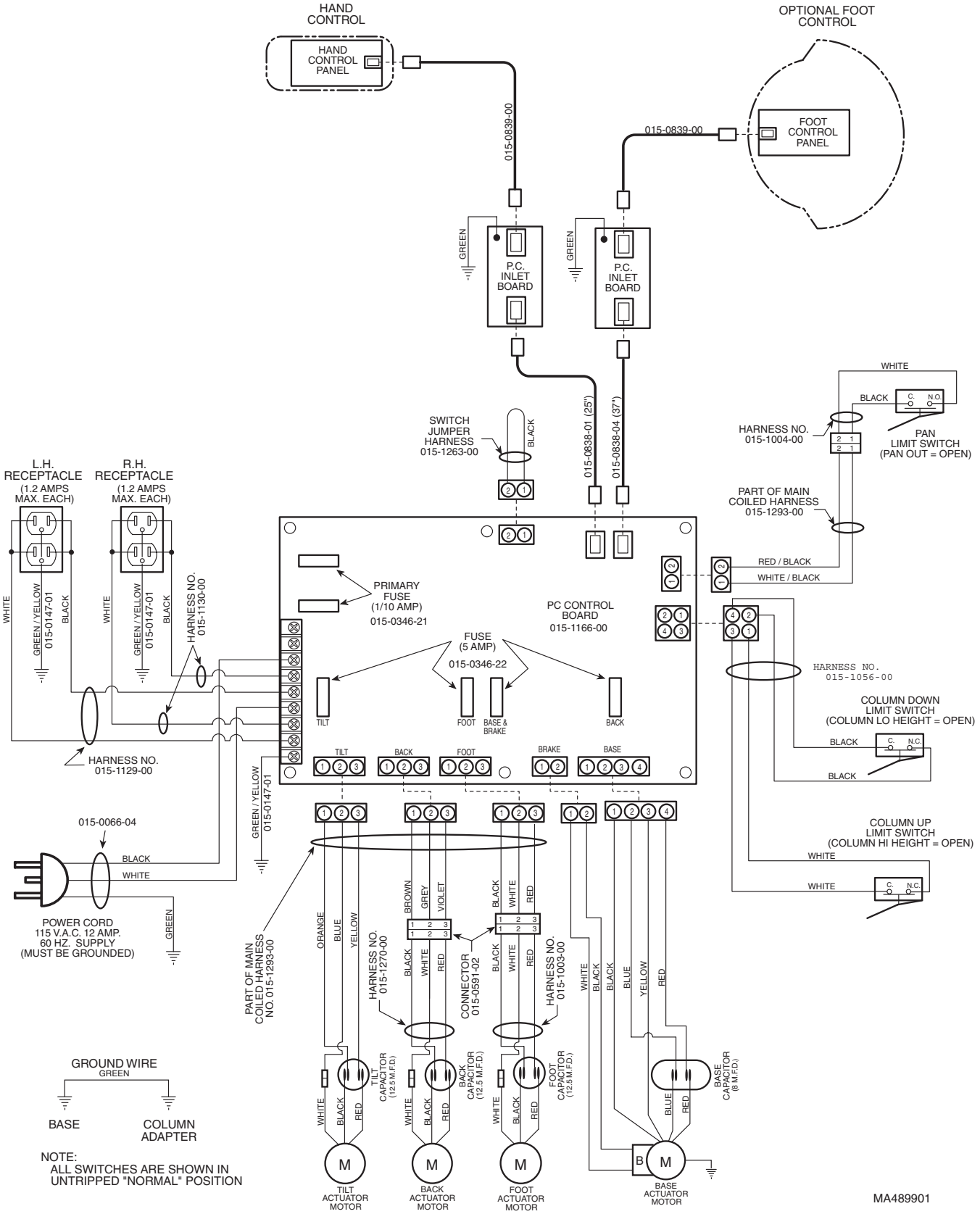

Figure 5-5.1 115 VAC Non-Programmable Table Electrical Schematic / Wiring Diagram (411-016)
Used on Units with Serial Numbers JX4503 thru JX6169

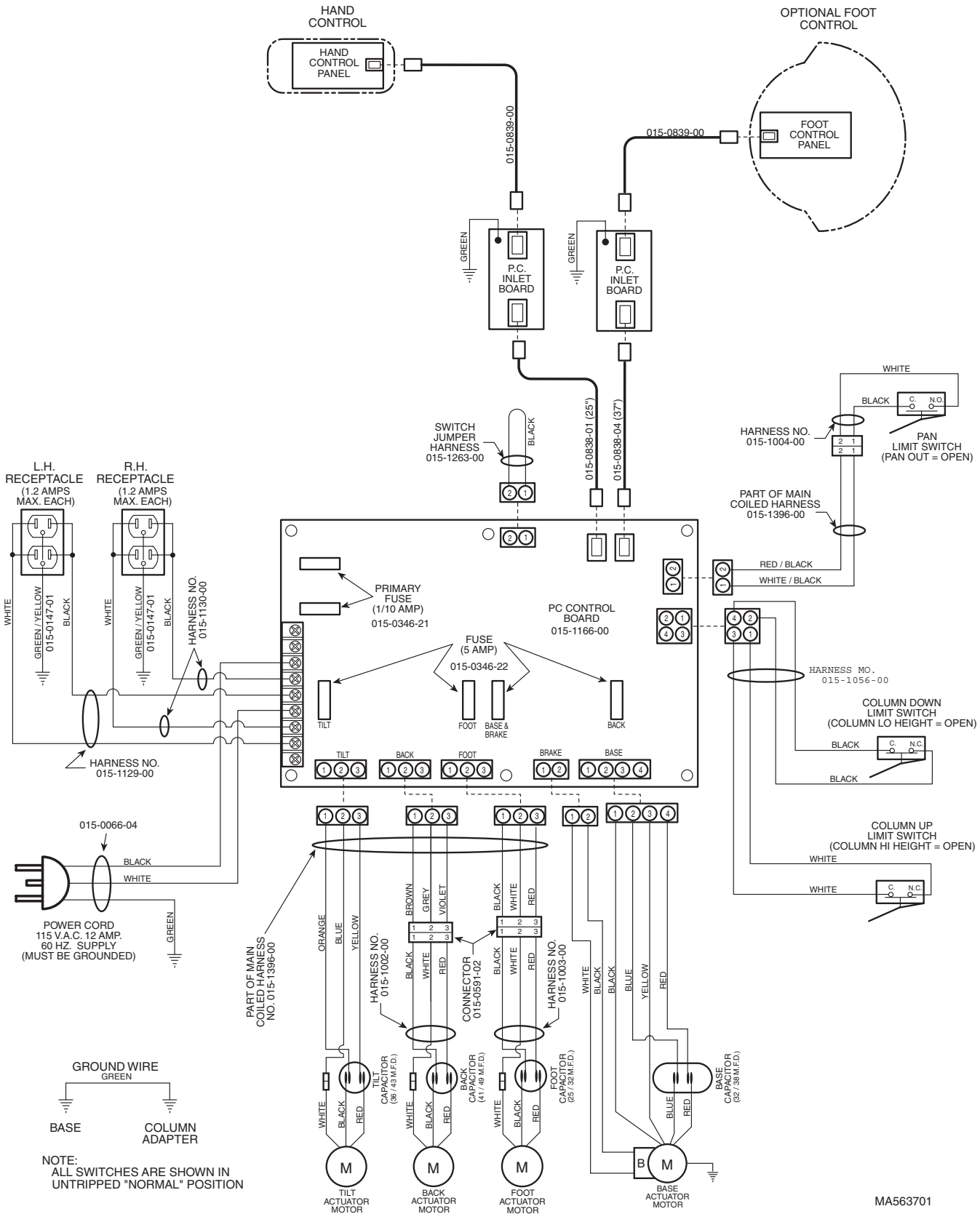

Figure 5-5.2 115 VAC Non-Programmable Table Electrical Schematic / Wiring Diagram (411-016)
Used on Units with Serial Numbers JX6170 thru Present

SECTION V
SCHEMATICS AND DIAGRAMS

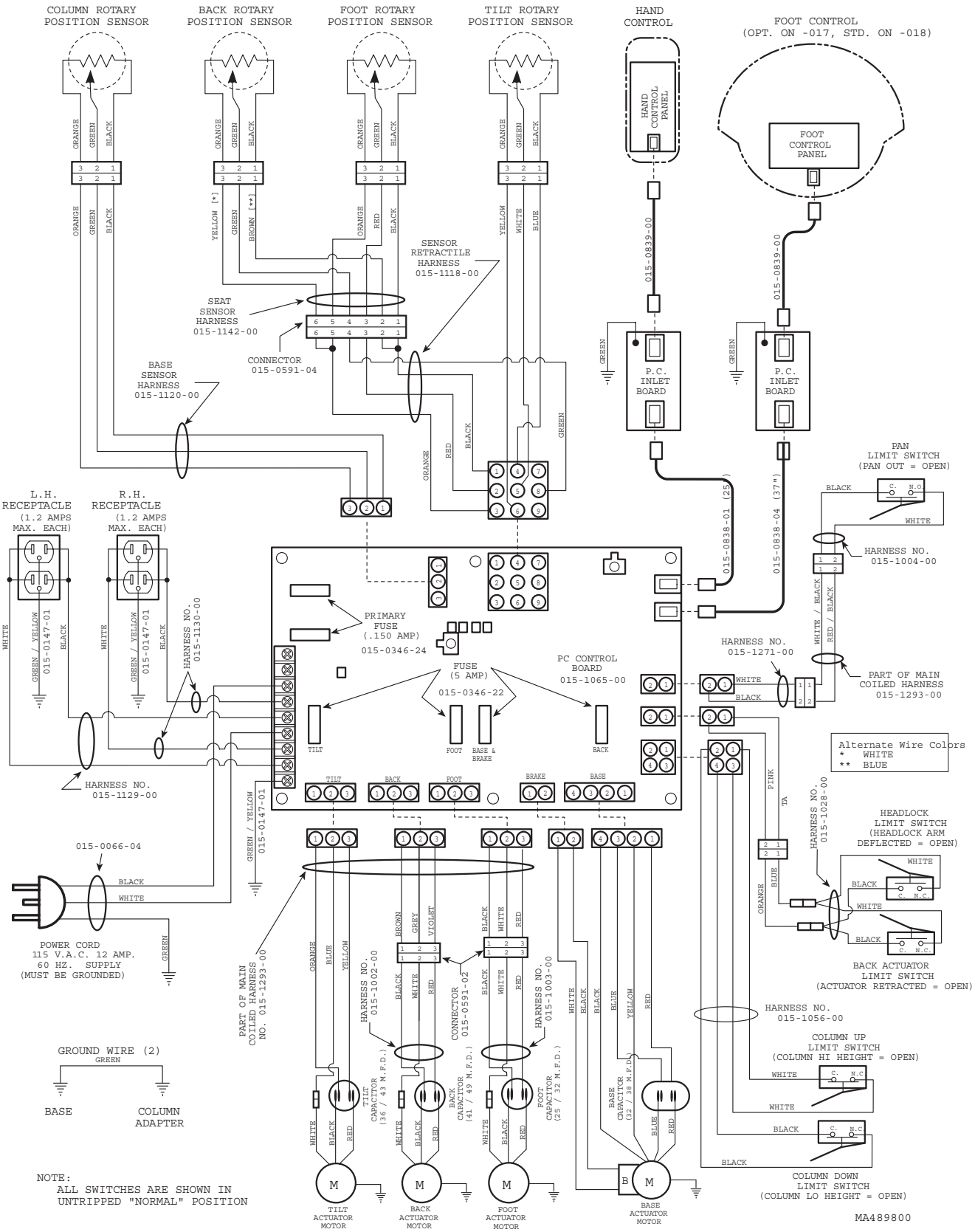
COLUMN ROTARY POSITION SENSOR
BACK ROTARY POSITION SENSOR
FOOT ROTARY POSITION SENSOR
TILT ROTARY POSITION SENSOR
HAND CONTROL
FOOT CONTROL (OPT. ON -017, STD. ON -018)
HAND CONTROL PANEL
FOOT CONTROL PANEL
SENSOR RETRACTILE HARNESS 015-1118-00
SEAT SENSOR HARNESS 015-1142-00
CONNECTOR 015-0591-04
BASE SENSOR HARNESS 015-1120-00
015-0839-00
015-0838-01 (25")
015-0838-04 (37")
P.C. INLET BOARD
PAN LIMIT SWITCH (PAN OUT = OPEN)
HARNESS NO. 015-1004-00
HARNESS NO. 015-1271-00
PART OF MAIN COILED HARNESS 015-1293-00
L.H. RECEPTACLE (1.2 AMPS MAX. EACH)
R.H. RECEPTACLE (1.2 AMPS MAX. EACH)
HARNESS NO. 015-1130-00
PRIMARY FUSE (.150 AMP) 015-0346-24
FUSE (5 AMP) 015-0346-22
PC CONTROL BOARD 015-1065-00
HARNESS NO. 015-1129-00
Alternate Wire Colors
* WHITE
** BLUE
HARNESS NO. 015-1028-00
HEADLOCK LIMIT SWITCH (HEADLOCK ARM DEFLECTED = OPEN)
BACK ACTUATOR LIMIT SWITCH (ACTUATOR RETRACTED = OPEN)
015-0066-04
POWER CORD 115 V.A.C. 12 AMP. 60 HZ. SUPPLY (MUST BE GROUNDED)
PART OF MAIN COILED HARNESS NO. 015-1293-00
HARNESS NO. 015-1002-00
CONNECTOR 015-0591-02
HARNESS NO. 015-1003-00
HARNESS NO. 015-1056-00
COLUMN UP LIMIT SWITCH (COLUMN HI HEIGHT = OPEN)
COLUMN DOWN LIMIT SWITCH (COLUMN LO HEIGHT = OPEN)
GROUND WIRE (2)
BASE
COLUMN ADAPTER
TILT CAPACITOR (36 / 43 M.F.D.)
BACK CAPACITOR (41 / 49 M.F.D.)
FOOT CAPACITOR (25 / 32 M.F.D.)
BASE CAPACITOR (52 / 38 M.F.D.)
TILT ACTUATOR MOTOR
BACK ACTUATOR MOTOR
FOOT ACTUATOR MOTOR
BASE ACTUATOR MOTOR
NOTE:
ALL SWITCHES ARE SHOWN IN UNTRIPPED "NORMAL" POSITION
MA489800

Figure 5-6. 115 VAC Programmable Table Electrical Schematic / Wiring Diagram (411-017 & 411-018)
Used on Units with Serial Numbers JY1000 thru JY1889 and LS1000 thru LS1027

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SECTION V
SCHEMATICS AND DIAGRAMS

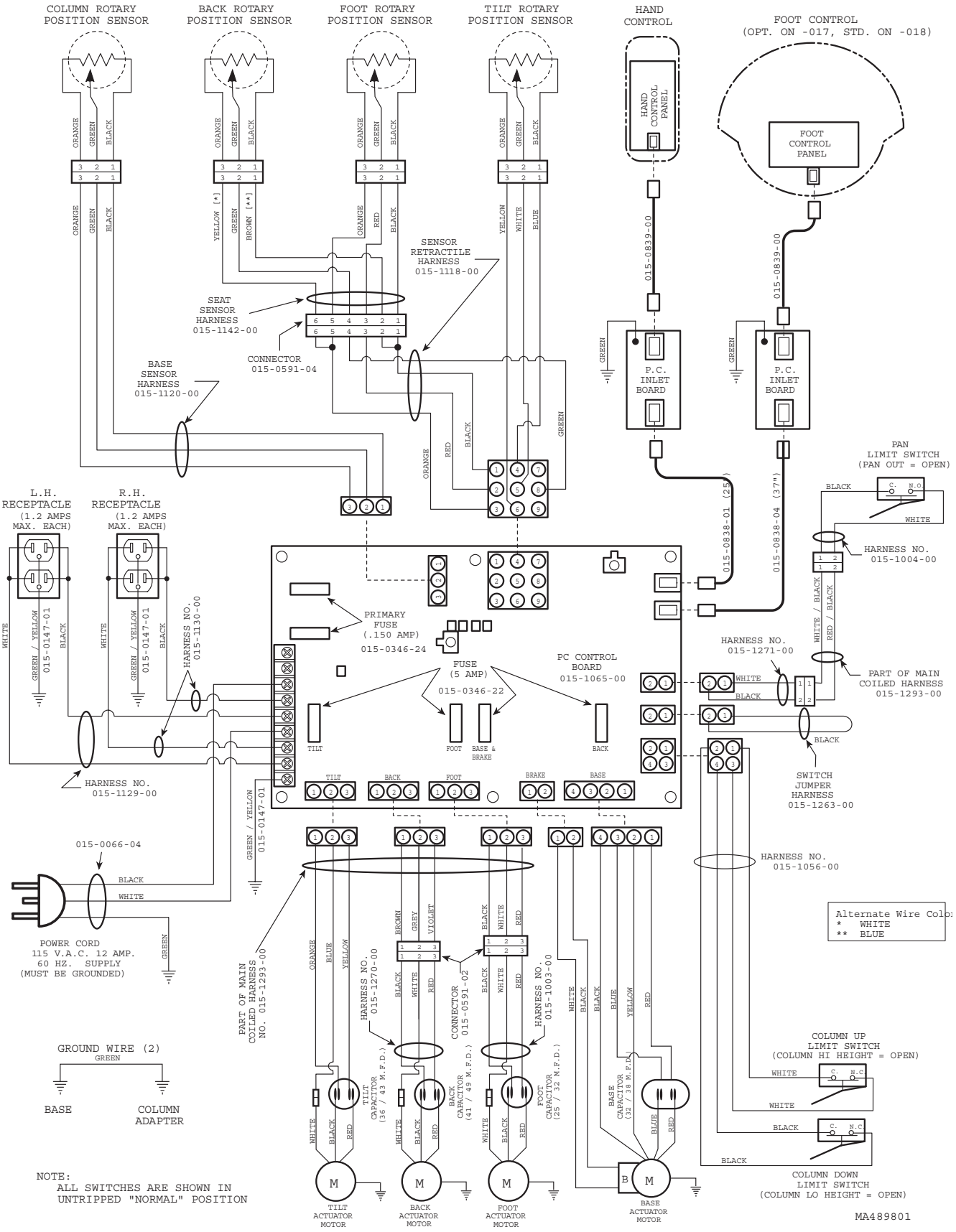

Figure 5-6.1 115 VAC Programmable Table Electrical Schematic / Wiring Diagram (411-017 & 411-018)
Used on Units with Serial Numbers JY1890 and LS1028 thru JY2538 and LS1106

SECTION V
SCHEMATICS AND DIAGRAMS

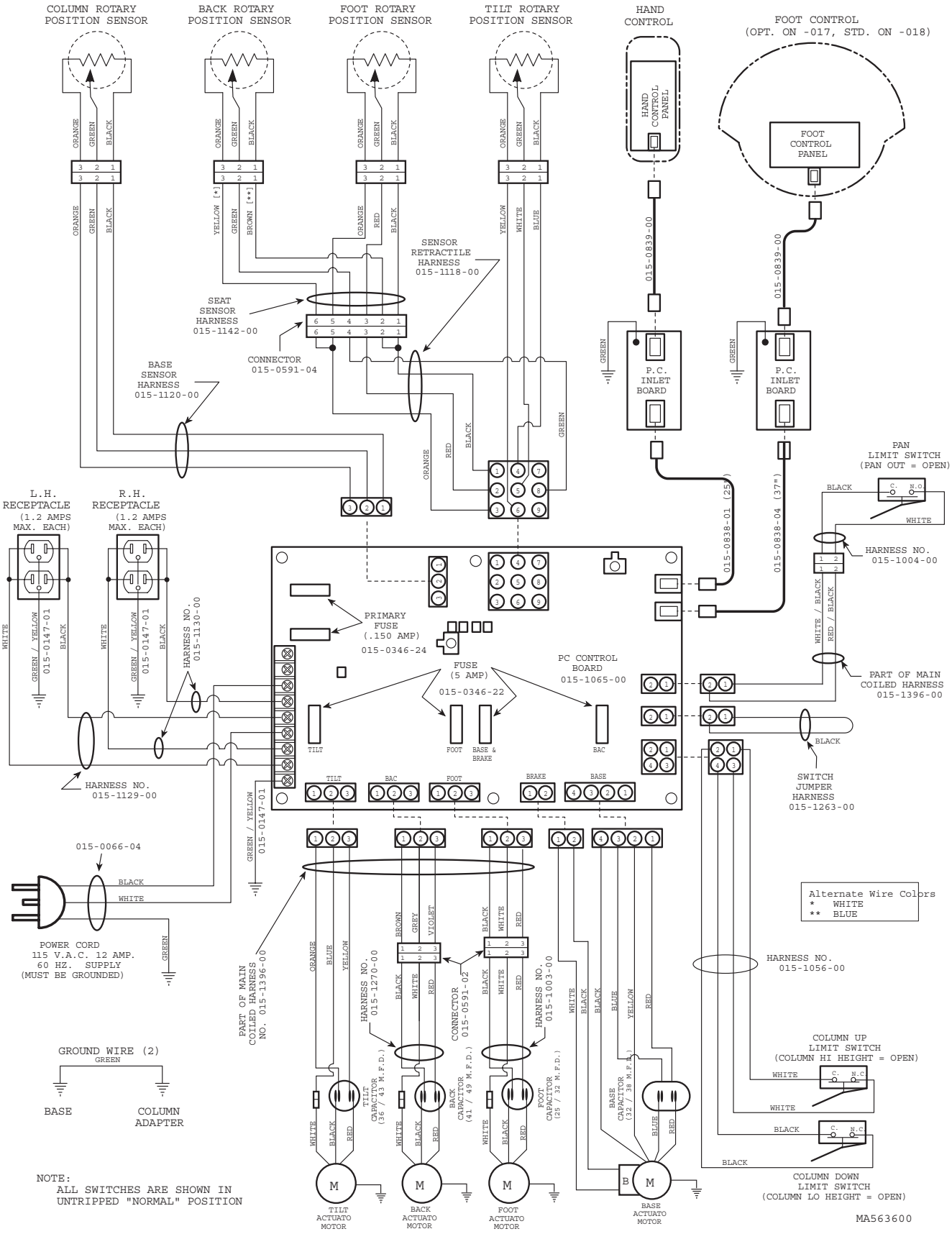
COLUMN ROTARY POSITION SENSOR
BACK ROTARY POSITION SENSOR
FOOT ROTARY POSITION SENSOR
TILT ROTARY POSITION SENSOR
HAND CONTROL
FOOT CONTROL (OPT. ON -017, STD. ON -018)
HAND CONTROL PANEL
FOOT CONTROL PANEL
015-0839-00
SENSOR RETRACTILE HARNESS 015-1118-00
SEAT SENSOR HARNESS 015-1142-00
CONNECTOR 015-0591-04
BASE SENSOR HARNESS 015-1120-00
P.C. INLET BOARD
PAN LIMIT SWITCH (PAN OUT = OPEN)
HARNESS NO. 015-1004-00
015-0838-01 (25")
015-0838-04 (37")
L.H. RECEPTACLE (1.2 AMPS MAX. EACH)
R.H. RECEPTACLE (1.2 AMPS MAX. EACH)
HARNESS NO. 015-1130-00
HARNESS NO. 015-1129-00
PRIMARY FUSE (.150 AMP) 015-0346-24
FUSE (5 AMP) 015-0346-22
PC CONTROL BOARD 015-1065-00
PART OF MAIN COILED HARNESS 015-1396-00
SWITCH JUMPER HARNESS 015-1263-00
015-0066-04
POWER CORD 115 V.A.C. 12 AMP. 60 HZ. SUPPLY (MUST BE GROUNDED)
Alternate Wire Colors
* WHITE
** BLUE
HARNESS NO. 015-1056-00
HARNESS NO. 015-1270-00
CONNECTOR 015-0591-02
HARNESS NO. 015-1003-00
PART OF MAIN COILED HARNESS NO. 015-1396-00
GROUND WIRE (2)
BASE
COLUMN ADAPTER
COLUMN UP LIMIT SWITCH (COLUMN HI HEIGHT = OPEN)
COLUMN DOWN LIMIT SWITCH (COLUMN LO HEIGHT = OPEN)
TILT CAPACITOR (36 / 43 M.F.D.)
BACK CAPACITOR (41 / 49 M.F.D.)
FOOT CAPACITOR (25 / 32 M.F.D.)
BASE CAPACITOR (32 / 38 M.F.D.)
TILT ACTUATO MOTOR
BACK ACTUATO MOTOR
FOOT ACTUATO MOTOR
BASE ACTUATO MOTOR
NOTE:
ALL SWITCHES ARE SHOWN IN UNTRIPPED "NORMAL" POSITION
MA563600

Figure 5-6.2 115 VAC Programmable Table Electrical Schematic / Wiring Diagram (411-017 & 411-018)
Used on Units with Serial Numbers JY2539 and LS1107 thru JY2595 and LS1176

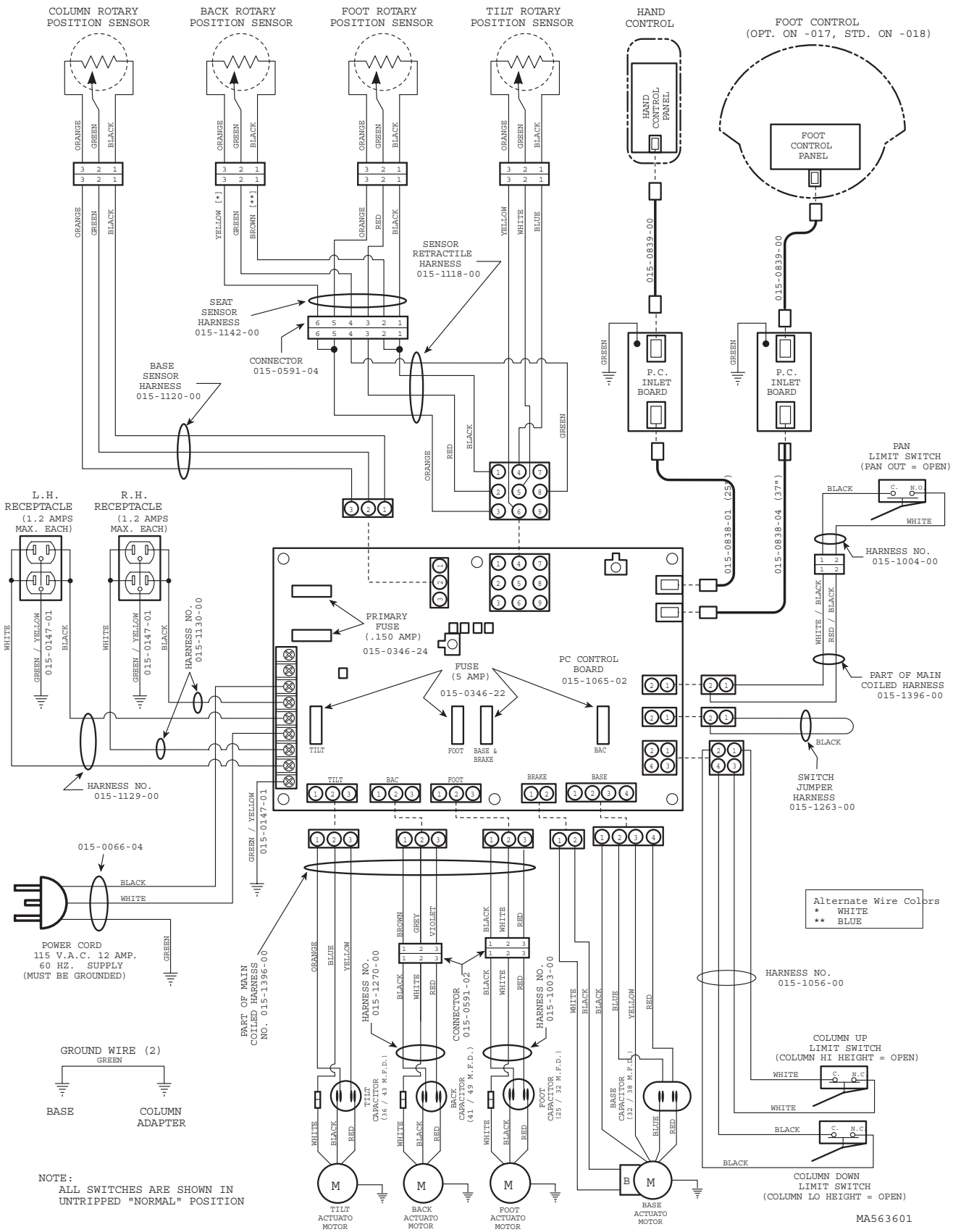
COLUMN ROTARY POSITION SENSOR
BACK ROTARY POSITION SENSOR
FOOT ROTARY POSITION SENSOR
TILT ROTARY POSITION SENSOR
HAND CONTROL
FOOT CONTROL (OPT. ON -017, STD. ON -018)
HAND CONTROL PANEL
FOOT CONTROL PANEL
SENSOR RETRACTILE HARNESS 015-1118-00
SEAT SENSOR HARNESS 015-1142-00
CONNECTOR 015-0591-04
BASE SENSOR HARNESS 015-1120-00
015-0839-00
015-0838-01 (25")
015-0838-04 (37")
P.C. INLET BOARD
PAN LIMIT SWITCH (PAN OUT = OPEN)
HARNESS NO. 015-1004-00
PART OF MAIN COILED HARNESS 015-1396-00
SWITCH JUMPER HARNESS 015-1263-00
L.H. RECEPTACLE (1.2 AMPS MAX. EACH)
R.H. RECEPTACLE (1.2 AMPS MAX. EACH)
HARNESS NO. 015-1130-00
HARNESS NO. 015-1129-00
PRIMARY FUSE (.150 AMP) 015-0346-24
FUSE (5 AMP) 015-0346-22
PC CONTROL BOARD 015-1065-02
015-0066-04
POWER CORD 115 V.A.C. 12 AMP. 60 HZ. SUPPLY (MUST BE GROUNDED)
GROUND WIRE (2)
BASE
COLUMN ADAPTER
PART OF MAIN COILED HARNESS NO. 015-1396-00
HARNESS NO. 015-1270-00
CONNECTOR 015-0591-02
HARNESS NO. 015-1003-00
HARNESS NO. 015-1056-00
Alternate Wire Colors
* WHITE
** BLUE
COLUMN UP LIMIT SWITCH (COLUMN HI HEIGHT = OPEN)
COLUMN DOWN LIMIT SWITCH (COLUMN LO HEIGHT = OPEN)
TILT CAPACITOR (36 / 43 M.F.D.)
BACK CAPACITOR (41 / 49 M.F.D.)
FOOT CAPACITOR (25 / 32 M.F.D.)
BASE CAPACITOR (32 / 38 M.F.D.)
TILT ACTUATO MOTOR
BACK ACTUATO MOTOR
FOOT ACTUATO MOTOR
BASE ACTUATO MOTOR
NOTE:
ALL SWITCHES ARE SHOWN IN UNTRIPPED "NORMAL" POSITION
MA563601

Figure 5-6.3 115 VAC Programmable Table Electrical Schematic / Wiring Diagram (411-017 & 411-018)
Used on Units with Serial Numbers JY2596 thru JY2930 and LS1177 thru LS1302

SECTION V
SCHEMATICS AND DIAGRAMS

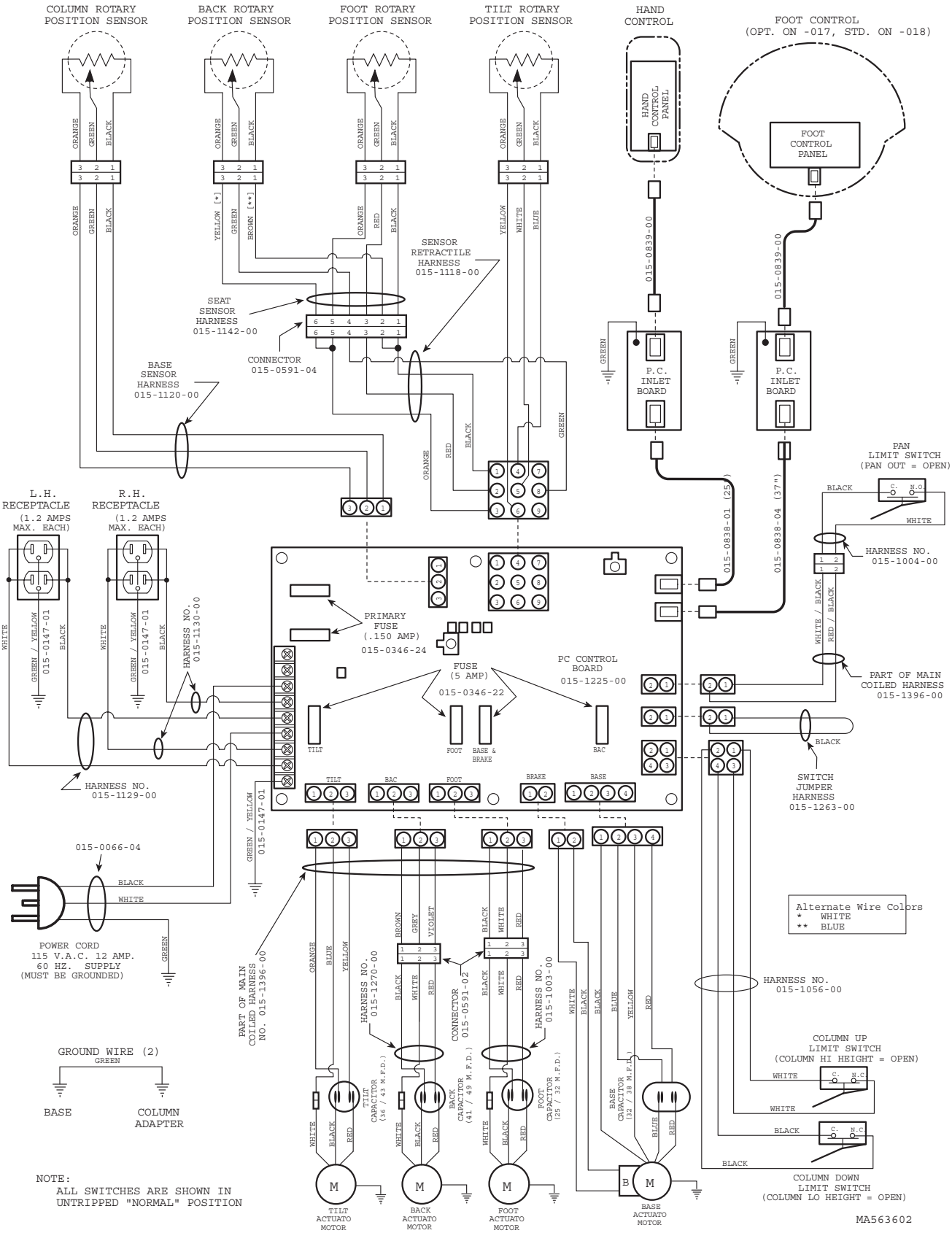

Figure 5-6.3 115 VAC Programmable Table Electrical Schematic / Wiring Diagram (411-017 & 411-018)
Used on Units with Serial Numbers JY2931 and LS1303 thru Present

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NON-PROGRAMMABLE FOOT CONTROL

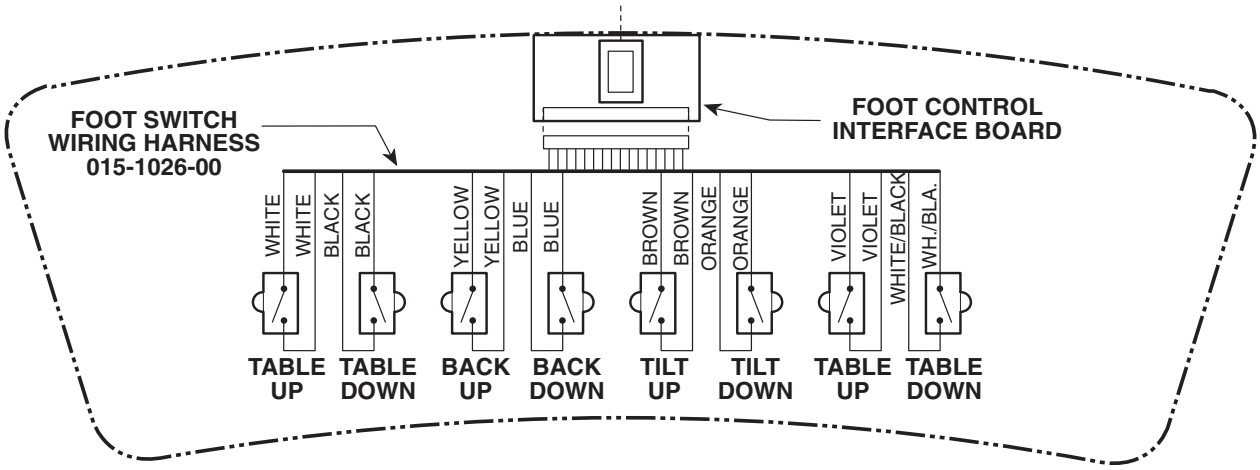
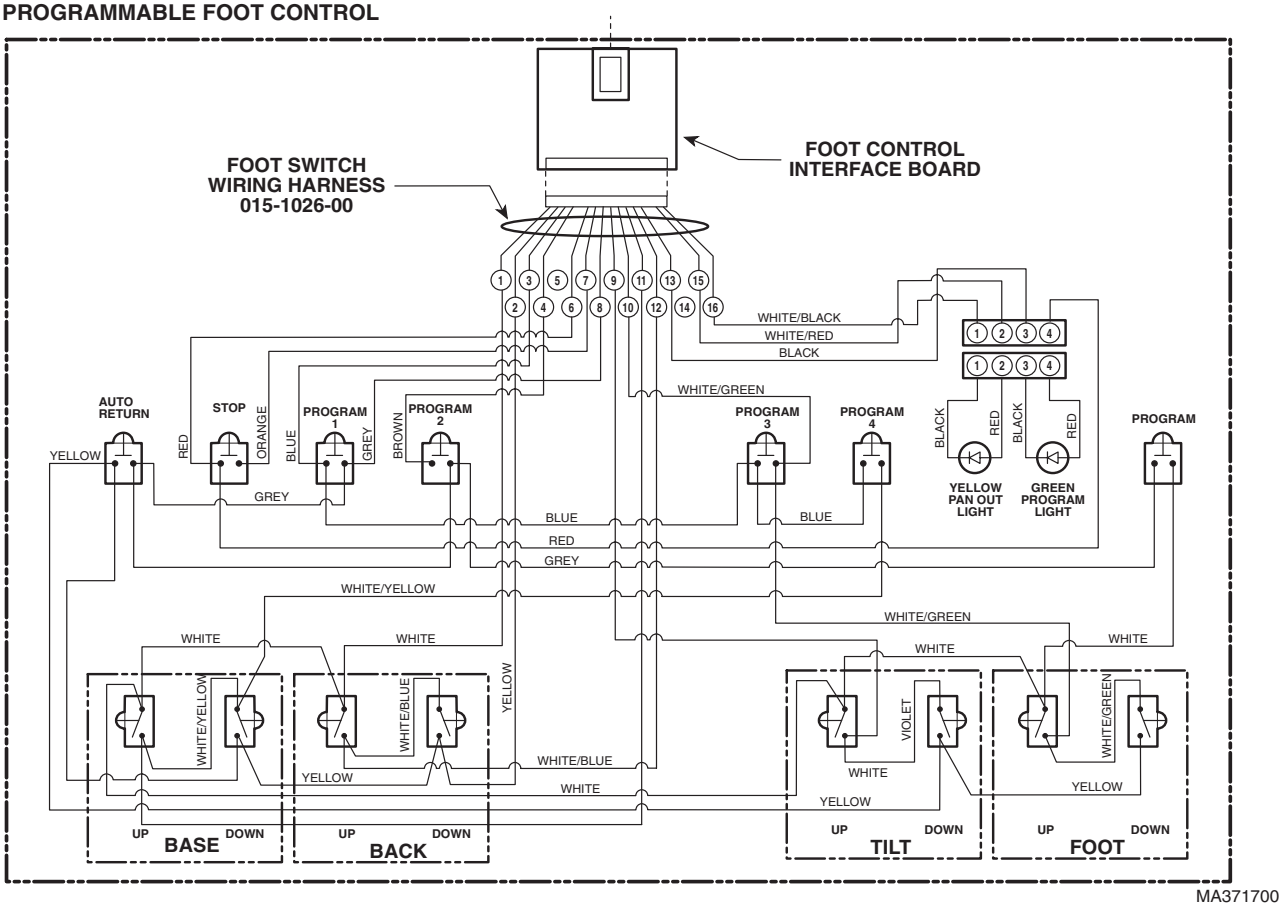


Figure 5-7. Foot Control Electrical Schematic / Wiring Diagram (Non-Programmable Units With Serial Numbers: GT1000 thru Present)

PROGRAMMABLE FOOT CONTROL



MA371700

Figure 5-8. Foot Control Electrical Schematic / Wiring Diagram (Programmable Units With Serial Numbers: GV1000 thru Present)

SECTION V
SCHEMATICS AND DIAGRAMS

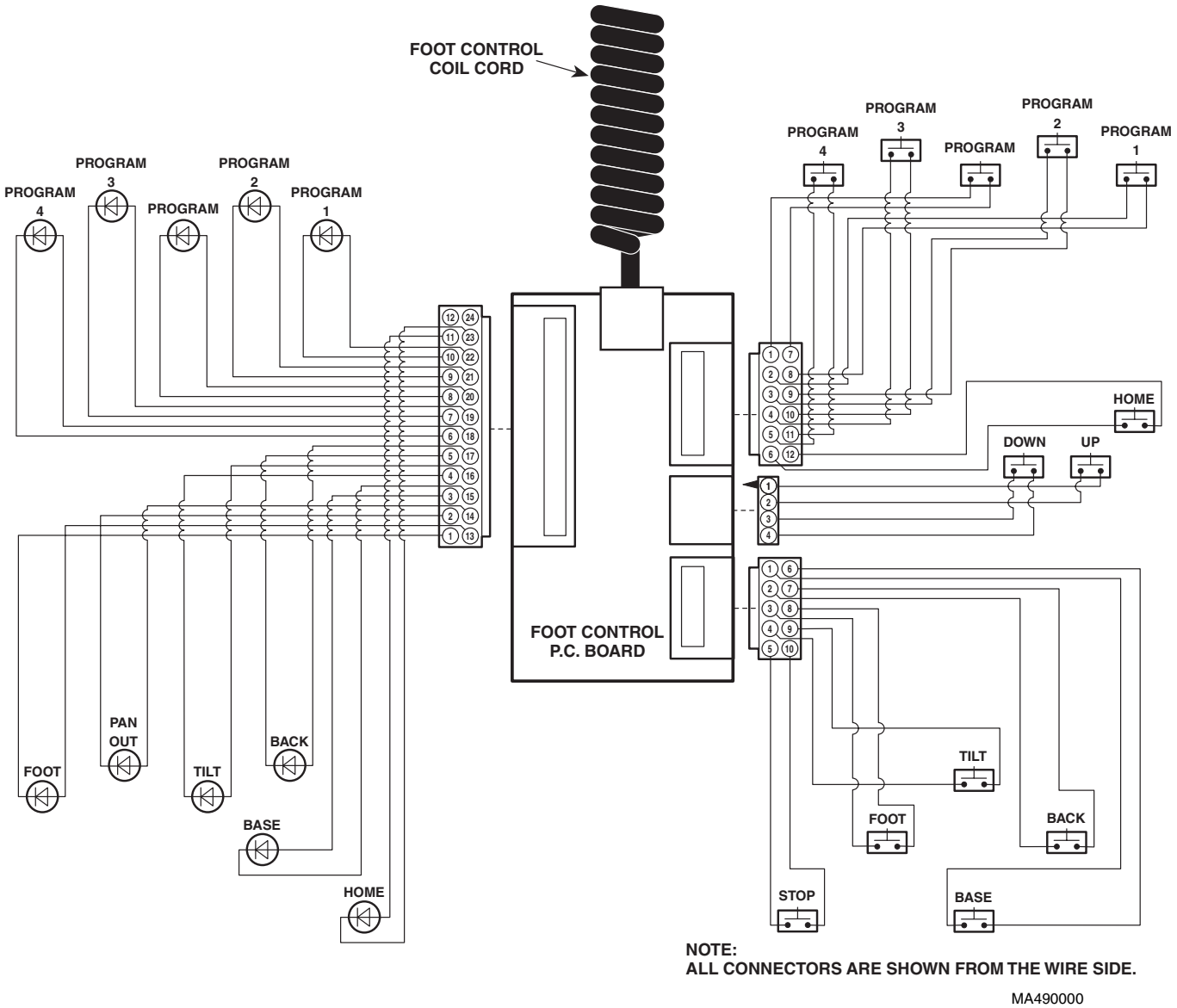


Figure 5-9. Foot Control Electrical Schematic / Wiring Diagram
(Programmable Units With Serial Numbers: JY1000, LS1000, & HZ1000 thru Present)

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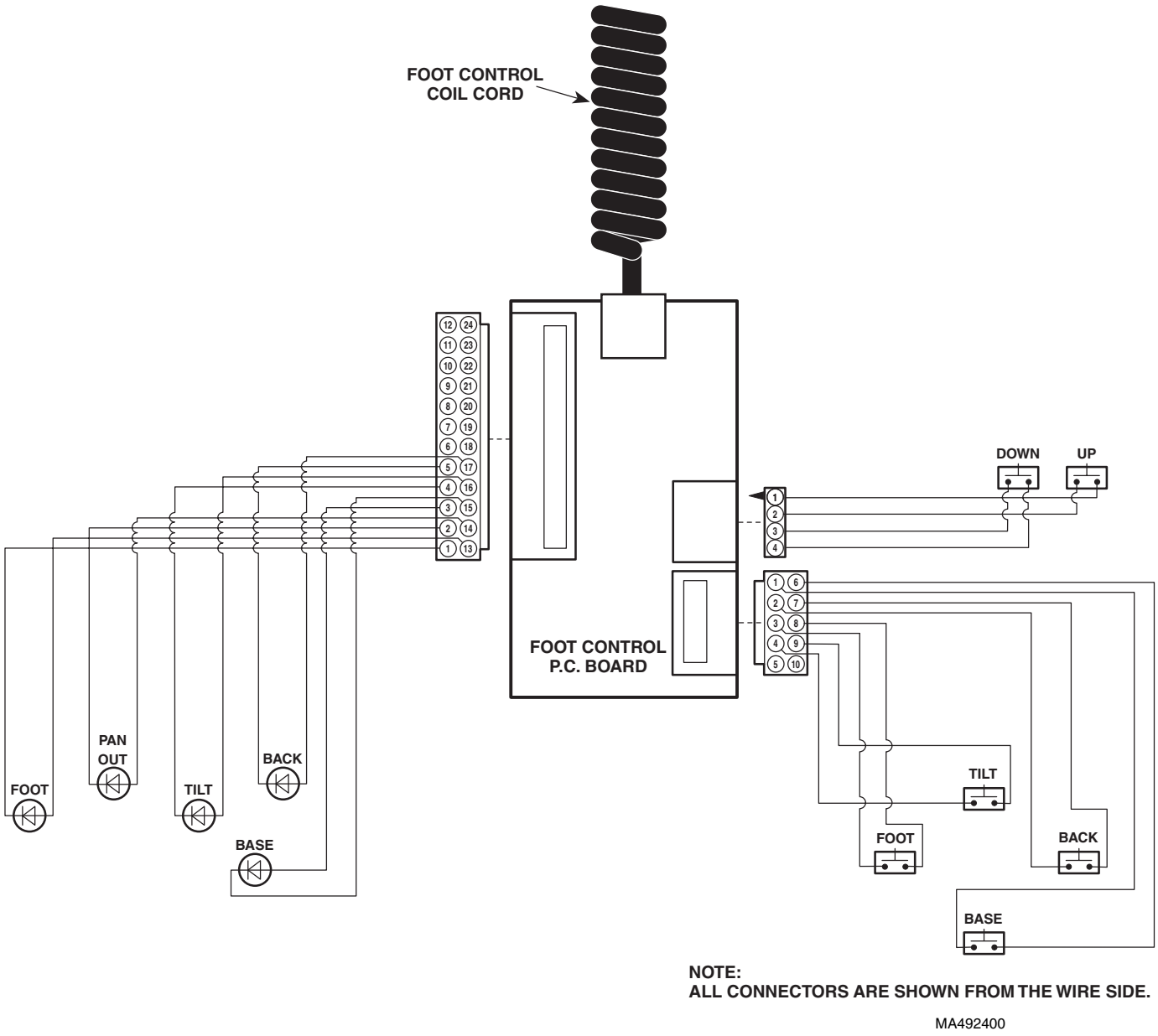

Figure 5-10. Foot Control Electrical Schematic / Wiring Diagram
(Non-Programmable Units With Serial Numbers: JX1000 & HY1000 thru Present)

SECTION V
SCHEMATICS AND DIAGRAMS

5.2 Error Codes Chart (Applies To Programmable Tables Only)

Table 5-1 lists all of the error codes which may be displayed on the programmable hand control. When nothing happens after a Position ”1”, “2”, “3”, or “4” button is pressed, perform the following steps to view the error codes on the hand control.

A. Using Table’s Diagnostic Mode To View Error Codes And Repair Table

(1) Unplug the table power cord from outlet receptacle and wait five seconds before going to next step.

NOTE
If the PROGRAM MODE lamp does not begin to flash on and off, then the PC control board is not in the error code mode and no error codes will be displayed.

(2) Plug the table power cord into outlet receptacle while observing the PROGRAM MODE and PAN OUT lamps.

Observe. The PROGRAM MODE lamp will flash on and then off for the number of times equal to the first digit of the error code stored in memory. Then, the PAN OUT lamp will flash on and off for the number of times equal to the second digit of the error code. Then, the PC control board will pause for one second, repeat the error code a second time, pause one second, and repeat the error code a third time. If there are additional error codes, they are also displayed three time consecutively with a one second pause in between. This is repeated until all error codes in the PC control board’s memory have been displayed. Then, the PC control board continuously cycles the error codes on the hand control.

(3) Look up the error code(s) in Table 5-1 to get a description of the error code(s). Also, the error code(s) and their remedy(ies) can be found in Table 2-1 Troubleshooting Guide.

(4) Once the problem has been repaired, calibrate the table to clear the error codes and allow the table program recall feature to used again (Refer to para 4.2).

Table 5-1. Error Code Chart

Error Code	Description Of Error Code
11	System calibration not completed due to error condition.
12	Invalid data received from following user interface(s): hand control or foot control.
13 - 19	Reserved.
20	Not Used.
21	Base position sensor output voltage did not change during Position Recall mode.
22	Base position sensor output voltage is increasing or decreasing incorrectly during Calibration mode or Position Recall mode.
23	Programmed Position was not stored due to Analog-to-Digital conversion error when reading Base position sensor.
24	Tilt position sensor output voltage did not change during Position Recall mode.
25	Tilt position sensor output voltage is increasing or decreasing incorrectly during Calibration mode or Position Recall mode.
26	Programmed Position was not stored due to Analog-to-Digital conversion error when reading Tilt position sensor.
27 - 29	Reserved.
30	Not Used.
31	Back position sensor output voltage did not change during Position Recall mode.
32	Back position sensor output voltage is increasing or decreasing incorrectly during Calibration mode or Position Recall mode.
33	Programmed Position was not stored due to Analog-to-Digital conversion error when reading Back position sensor.
34	Foot position sensor output voltage did not change during Position Recall mode.
35	Foot position sensor output voltage is increasing or decreasing incorrectly during Calibration mode or Position Recall mode.
36	Programmed Position was not stored due to Analog-to-Digital conversion error when reading Foot position sensor.
37 - 39	Reserved.

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Return To Table Of Contents

SECTION V
SCHEMATICS AND DIAGRAMS

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SECTION VI
PARTS LIST

6.1 Introduction

The illustrated parts list provides information for identifying and ordering the parts necessary to maintain the unit in peak operating condition. Refer to paragraph 1.5 for parts ordering information.

6.2 Description of Columns

The Item column of the parts list gives a component its own unique number. The same number is given to the component in the parts illustration. This allows a part number of a component to be found if the technician can visually spot the part on the illustration. The technician simply finds the component in question on the illustration and notes the item number of that component. Then, he finds that item number in the parts list. The row corresponding to the item number gives the technician the part number, a description of the component, and quantity of parts per subassembly. Also, if a part number is known, the location of that component can be determined by looking for the item number of the component on the illustration.

The Part No. column lists the MIDMARK part number for that component.

The Description column provides a physical description of the component.

The Qty. column lists the number of units of a particular component that is required for the subassembly. The letters “AR” denote “as required” when quantities of a particular component cannot be determined, such as: adhesive.

Bullets { • } in the Part No. column and the Description column show the indenture level of a component. If a component does not have a bullet, it is a main component of that illustration. If a component has a bullet, it is a subcomponent of the next component listed higher in the parts list than itself that does not have a bullet. Likewise, if a component has two bullets, it is a subcomponent of the next component listed higher in the parts list than itself that has only one bullet.

6.3 Torque Specifications and Important Assembly Notes

When specific assembly torque specifications, measurements, or procedures have been identified, by our engineering department, as required to assure proper function of the unit, those torque specifications measurements, and procedures will be noted on the parts illustrations. Adherence to these requirements is essential.

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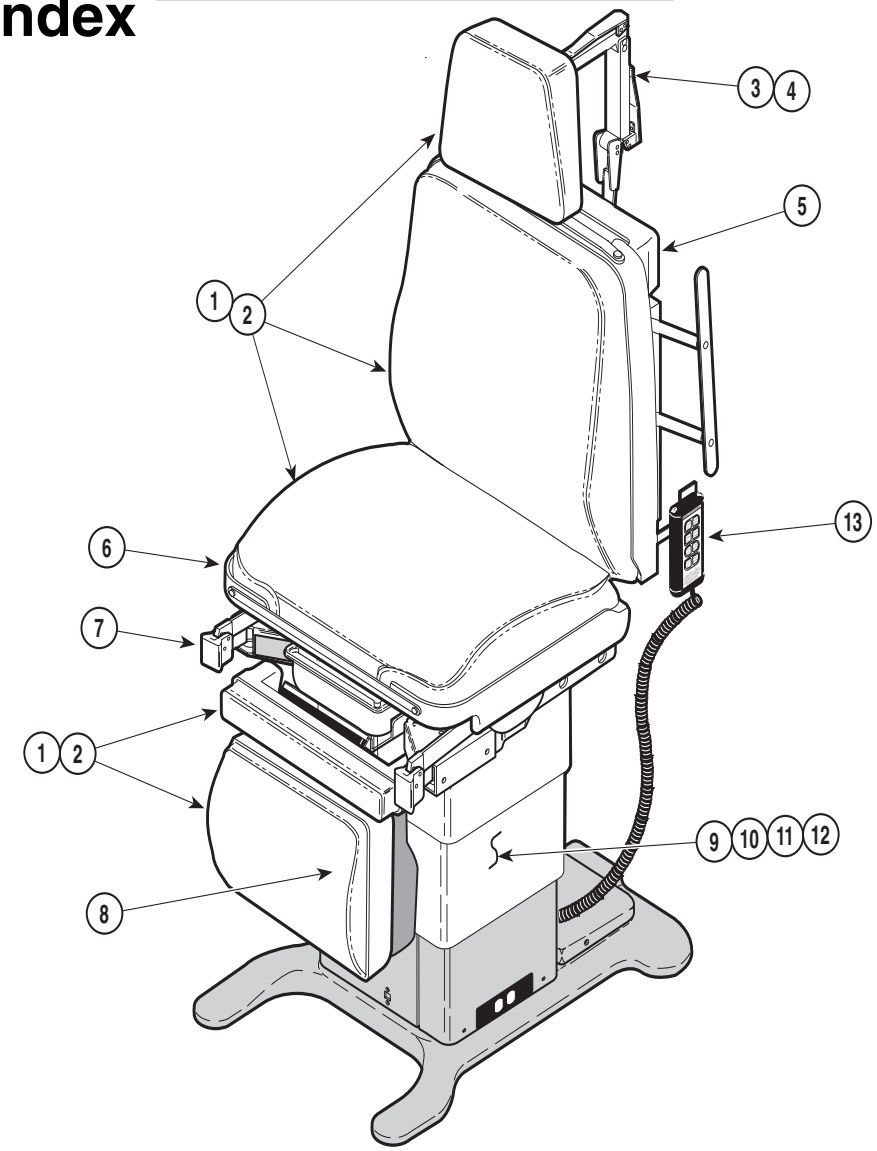
Pictorial Index



MA344401

Used on units with Serial Number GT1000 thru Present

Item	Part No.	Description	Page
	411-011	75L Non-Programmable Power Exam Table [115 V.] (Serial No. Prefix="GT")	6-2
1		• Upholstery Set-Styled	6-9
2		• Upholstery Set-Plain	6-10
3		• Headrest Components	6-11(*)
4		• • Headlock Assembly	6-12
5		• Back Components	6-13
6		• Seat Components	6-15
7		• Stirrup Assembly	6-16
8		• Leg Components	6-17(*)
9		• Base Cover Components	6-19
10		• Base Electrical Components	6-21(*)
11		• Column Components	6-24
12		• • Column Assembly	6-25
13		• Hand Control Assembly	6-26
		OPTIONAL ACCESSORIES	
	Refer to MEDICAL ACCESSORY BOOK {004-0096-00}		
14	9A4300X	Chair Arm Set Assembly	9A43
15	9A5100X	Facial Pad	9A51
16	9A7700X	I.V. Pole	9A77
17	9A7800X	Vision Block Screen	9A78
18	9A8100X	Articulating Armboard	9A81
19	9A8200X	Special Procedures Armboard	9A82
20	9A8300X	Instrument Tray Assembly	9A83
21	9A8500X	Foot Rest Step	9A85
22	9A8700X	Upholstery Cover Set	9A87
23	9A14400X	Knee Crutch Assembly	9A144
24	9A15700X	Side Rail Assembly	9A157
25	9A17900X	Fixed Armboard Assembly	9A179
26	9A18200X	Welch Allyn Hanger	9A182
27	9A19800X	Round Headrest Assembly	9A198
28	9A19900X	Special Procedures Headrest Assy	9A199
29	9A20300X	Foot Control Assembly	9A203
30	9A20400X	Urology Accessory	9A204
31	9A20500X	Base Rail Assembly	9A205
32	9A20800X	Knee Crutch Assembly	9A208
33	9A21300X	Caster Base Assembly	9A213
34	9A21400X	Restraint Belts	9A214
35	9A22100X	One Arm Wrist Rest	9A221
36	9A22700X	Seat Rail Assembly	9A227
37	9A22900X	Siderail Socket Accessary	9A229
38	9A23000X	Siderail Adapter Accessory	9A230

Always Specify Model & Serial Number

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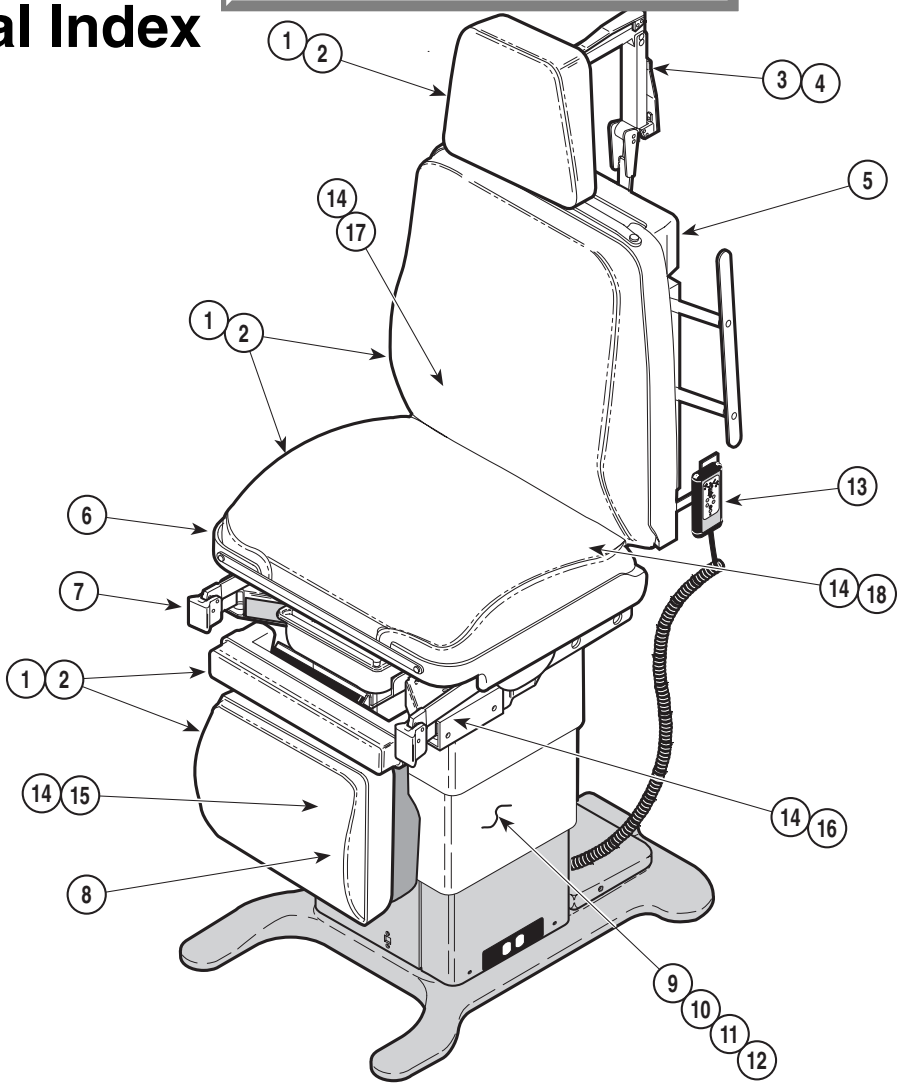

MA346901

Used on units with Serial Number GV-1000 thru Present

Item	Part No.	Description	Page
	411-012	75LP Programmable Power Exam Table [115 V.] (Serial No. Prefix = "GV")	6-3
1		• Upholstery Set-Styled	6-9
2		• Upholstery Set-Plain	6-10
3		• Headrest Components	6-11(*)
4		• • Headlock Assembly	6-12
5		• Back Components	6-13
6		• Seat Components	6-15
7		• Stirrup Assembly	6-16
8		• Leg Components	6-17(*)
9		• Base Cover Components	6-19
10		• Base Electrical Components	6-21(*)
11		• Column Components	6-24
12		• • Column Assembly	6-25
13		• Hand Control Assembly	6-27
14		• Program Position Components	6-30
15		• • Base Reducer Assembly	6-31
16		• • Foot Sensor Components	6-32
17		• • Back Sensor Components	6-33
18		• •Tilt Sensor Components	6-34
		OPTIONAL ACCESSORIES	
	Refer to MEDICAL ACCESSORY BOOK {004-0096-00}		
19	9A4300X	Chair Arm Set Assembly	9A43
20	9A5100X	Facial Pad	9A51
21	9A7700X	I.V. Pole	9A77
22	9A7800X	Vision Block Screen	9A78
23	9A8100X	Articulating Armboard	9A81
24	9A8200X	Special Procedures Armboard	9A82
25	9A8300X	Instrument Tray Assembly	9A83
26	9A8500X	Foot Rest Step	9A85
27	9A8700X	Upholstery Cover Set	9A87
28	9A14400X	Knee Crutch Assembly	9A144
29	9A15700X	Side Rail Assembly	9A157
30	9A17900X	Fixed Armboard Assembly	9A179
31	9A18200X	Welch Allyn Hanger	9A182
32	9A19800X	Round Headrest Assembly	9A198
33	9A19900X	Special Procedures Headrest Assy	9A199
34	9A20400X	Urology Accessory	9A204
35	9A20500X	Base Rail Assembly	9A205
36	9A20800X	Knee Crutch Assembly	9A208
37	9A21300X	Caster Base Assembly	9A213
38	9A21400X	Restraint Belts	9A214
39	9A22100X	One Arm Wrist Rest	9A221
40	9A22700X	Seat Rail Assembly	9A227
41	9A22900X	Siderail Socket Accessory	9A229
42	9A23000X	Siderail Adapter Accessory	9A230
43	9A23300X	Foot Control Assembly	9A233

Always Specify Model & Serial Number

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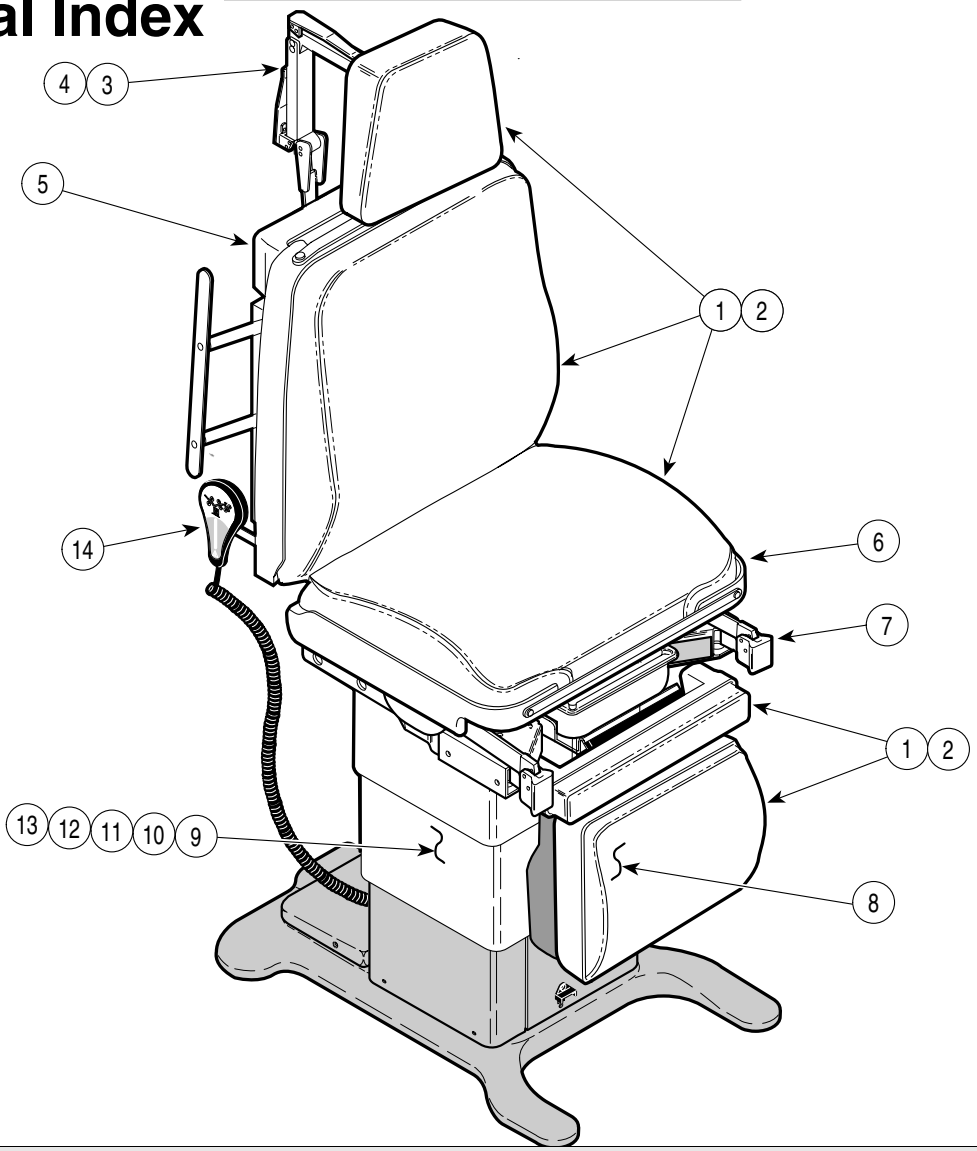

MA427202i

Used on units with Serial Number HY1000 thru Present

Item	Part No.	Description	Page
	411-013	75L Non-Programmable Power Exam Table [230 V] (Serial No. Prefix="HY")	6-4
1		• Upholstery Set-Styled	6-9
2		• Upholstery Set-Plain or Embossed	6-10
3		• Headrest Components	6-11(*)
4		• • Headlock Assembly	6-12
5		• Back Components	6-14
6		• Seat Components	6-15
7		• Stirrup Assembly	6-16
8		• Leg Components	6-18
9		• Base Cover Components	6-20
10		• Base Electrical Components	6-22(*)
11		• • Power Inlet Components	6-23
12		• Column Components	6-24
13		• • Column Assembly	6-25
14		• Hand Control Assembly	6-29
		OPTIONAL ACCESSORIES	
	Refer to MEDICAL ACCESSORY BOOK {004-0096-00}		
15	9A4300X	Chair Arm Set Assembly	9A43
16	9A5100X	Facial Pad	9A51
17	9A7700X	I.V. Pole	9A77
18	9A7800X	Vision Block Screen	9A78
19	9A8100X	Articulating Armboard	9A81
20	9A8200X	Special Procedures Armboard	9A82
21	9A8300X	Instrument Tray Assembly	9A83
22	9A8500X	Foot Rest Step	9A85
23	9A8700X	Upholstery Cover Set	9A87
24	9A14400X	Knee Crutch Assembly	9A144
25	9A15700X	Side Rail Assembly	9A157
26	9A17900X	Fixed Armboard Assembly	9A179
27	9A18200X	Welch Allyn Hanger	9A182
28	9A19800X	Round Headrest Assembly	9A198
29	9A19900X	Special Procedures Headrest Assy	9A199
30	9A20500X	Base Rail Assembly	9A205
31	9A20800X	Knee Crutch Assembly	9A208
32	9A21300X	Caster Base Assembly	9A213
33	9A21400X	Restraint Belts	9A214
34	9A22100X	One Arm Wrist Rest	9A221
35	9A22700X	Seat Rail Assembly	9A227
36	9A22900X	Siderail Socket Accessory	9A229
37	9A23000X	Siderail Adapter Accessory	9A230
38	9A23500X	Foot Control Assembly	9A235
39	9A26700X	Instrument Tray Assembly	9A267
40	9A26800X	Instrument Tray	9A268

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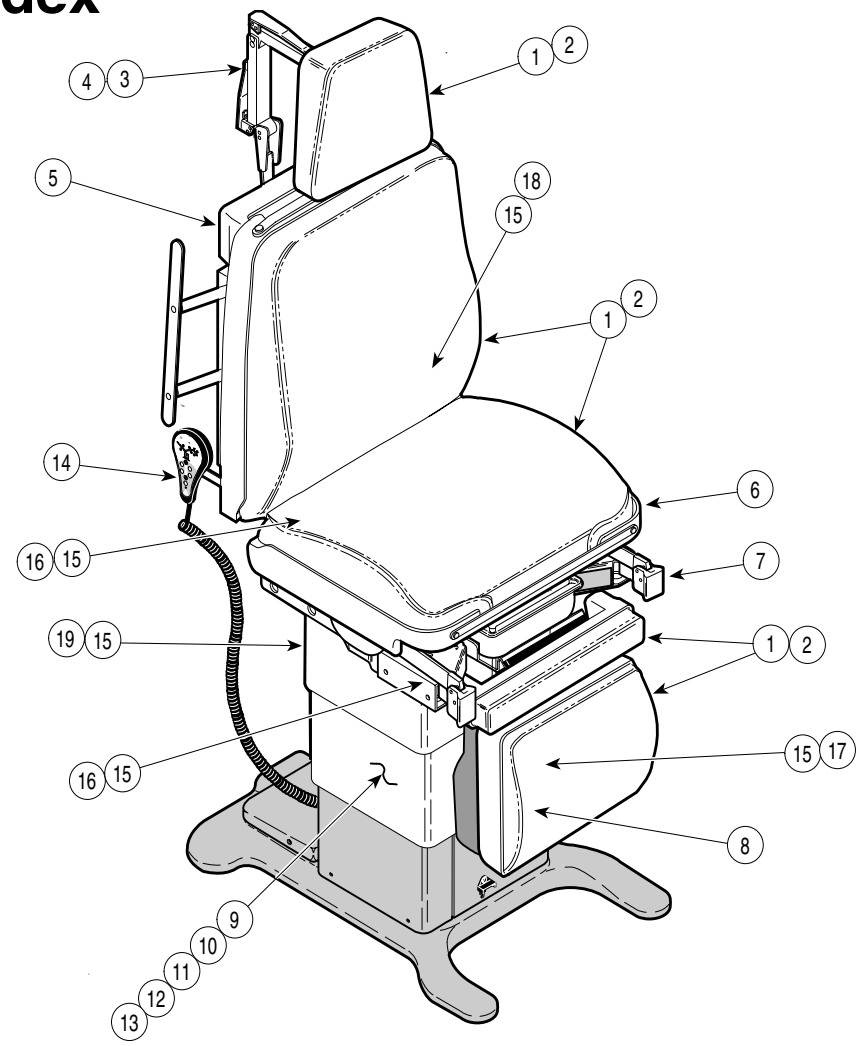
Pictorial Index



MA427102

Used on units with Serial Number HZ1000 thru Present

Item	Part No.	Description	Page
	411-014	411 Programmable Power Exam Table [230 V.] (Serial No. Prefix = "HZ")	6-5
1		• Upholstery Set-Styled	6-9
2		• Upholstery Set-Plain or Embossed	6-10
3		• Headrest Components	6-11(*)
4		• • Headlock Assembly	6-12
5		• Back Components	6-14
6		• Seat Components	6-15
7		• Stirrup Assembly	6-16
8		• Leg Components	6-18
9		• Base Cover Components	6-20
10		• Base Electrical Components	6-22(*)
11		• • Power Inlet Components	6-23
12		• Column Components	6-24
13		• • Column Assembly	6-25
14		• Hand Control Assembly	6-28
15		• Program Position Components	6-30
16		• • Base Reducer Assembly	6-31
17		• • Foot Sensor Components	6-32
18		• • Back Sensor Components	6-33
19		• •Tilt Sensor Components	6-34
		OPTIONAL ACCESSORIES	
		Refer to MEDICAL ACCESSORY BOOK {004-0096-00}	
20	9A4300X	Chair Arm Set Assembly	9A43
21	9A5100X	Facial Pad	9A51
22	9A7700X	I.V. Pole	9A77
23	9A7800X	Vision Block Screen	9A78
24	9A8100X	Articulating Armboard	9A81
25	9A8200X	Special Procedures Armboard	9A82
26	9A8300X	Instrument Tray Assembly	9A83
27	9A8500X	Foot Rest Step	9A85
28	9A8700X	Upholstery Cover Set	9A87
29	9A14400X	Knee Crutch Assembly	9A144
30	9A15700X	Side Rail Assembly	9A157
31	9A17900X	Fixed Armboard Assembly	9A179
32	9A18200X	Welch Allyn Hanger	9A182
33	9A19800X	Round Headrest Assembly	9A198
34	9A19900X	Special Procedures Headrest Assy	9A199
35	9A20500X	Base Rail Assembly	9A205
36	9A20800X	Knee Crutch Assembly	9A208
37	9A21300X	Caster Base Assembly	9A213
38	9A21400X	Restraint Belts	9A214
39	9A22100X	One Arm Wrist Rest	9A221
40	9A22700X	Seat Rail Assembly	9A227
41	9A22900X	Siderail Socket Accessory	9A229
42	9A23600X	Foot Control Assembly	9A236
43	9A26700X	Instrument Tray Assembly	9A267
44	9A26800X	Instrument Tray	9A268

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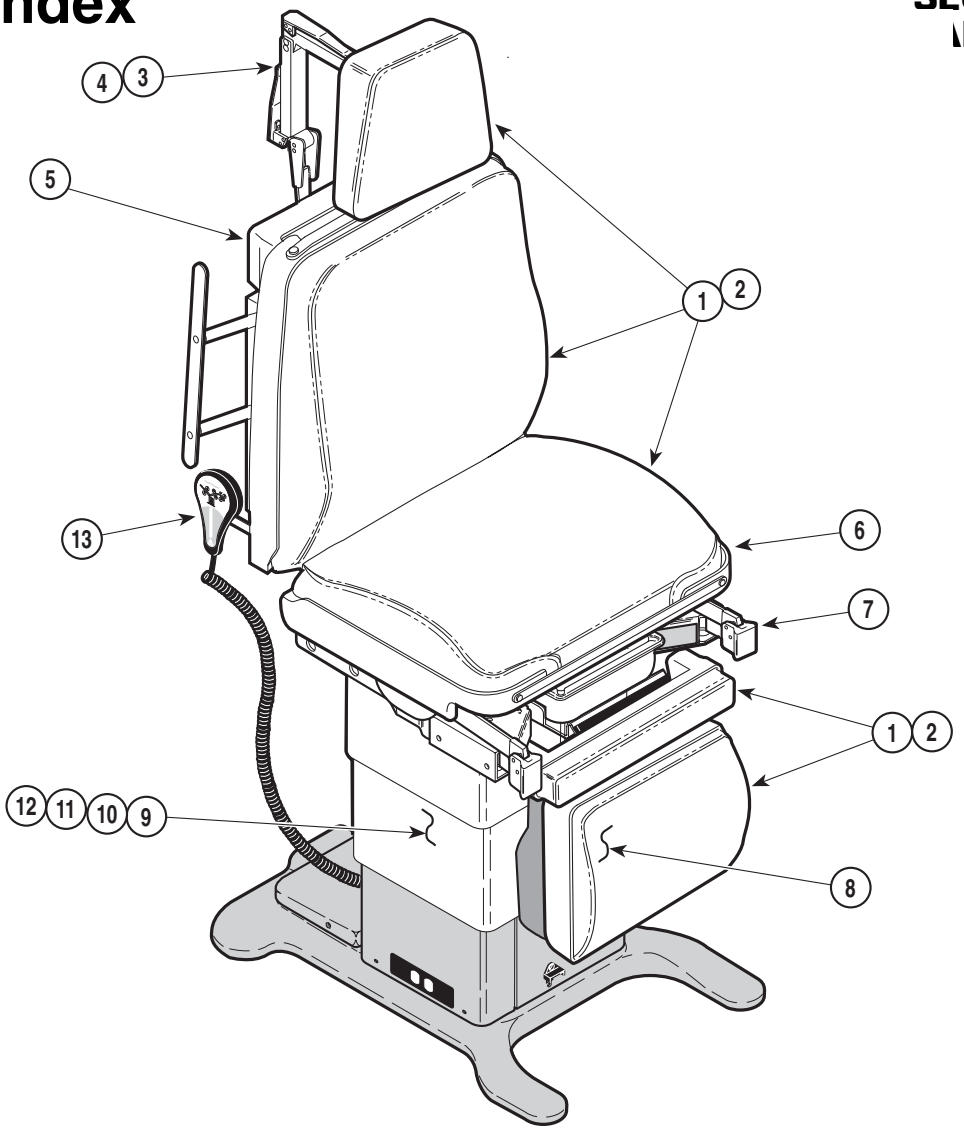

MA415400

Used on units with Serial Number JX1000 thru Present

Item	Part No.	Description	Page
	411-016	75L Non-Programmable Power Exam Table [115 V.] (Serial No. Prefix="JX")	6-6
1		• Upholstery Set-Styled	6-9
2		• Upholstery Set-Plain or Embossed	6-10
3		• Headrest Components	6-11(*)
4		• • Headlock Assembly	6-12
5		• Back Components	6-13
6		• Seat Components	6-15
7		• Stirrup Assembly	6-16
8		• Leg Components	6-17(*)
9		• Base Cover Components	6-19
10		• Base Electrical Components	6-21(*)
11		• Column Components	6-24
12		• • Column Assembly	6-25
13		• Hand Control Assembly	6-29
		OPTIONAL ACCESSORIES	
		Refer to MEDICAL ACCESSORY BOOK {004-0096-00}	
14	9A4300X	Chair Arm Set Assembly	9A43
15	9A5100X	Facial Pad	9A51
16	9A7700X	I.V. Pole	9A77
17	9A7800X	Vision Block Screen	9A78
18	9A8100X	Articulating Armboard	9A81
19	9A8200X	Special Procedures Armboard	9A82
20	9A8300X	Instrument Tray Assembly	9A83
21	9A8500X	Foot Rest Step	9A85
22	9A8700X	Upholstery Cover Set	9A87
23	9A14400X	Knee Crutch Assembly	9A144
24	9A15700X	Side Rail Assembly	9A157
25	9A17900X	Fixed Armboard Assembly	9A179
26	9A18200X	Welch Allyn Hanger	9A182
27	9A19800X	Round Headrest Assembly	9A198
28	9A19900X	Special Procedures Headrest Assy	9A199
29	9A20400X	Urology Accessory	9A204
30	9A20500X	Base Rail Assembly	9A205
31	9A20800X	Knee Crutch Assembly	9A208
32	9A21300X	Caster Base Assembly	9A213
33	9A21400X	Restraint Belts	9A214
34	9A22100X	One Arm Wrist Rest	9A221
35	9A22700X	Seat Rail Assembly	9A227
36	9A22900X	Siderail Socket Accessory	9A229
38	9A23500X	Foot Control Assembly	9A235
39	9A26700X	Instrument Tray Assembly	9A267
40	9A26800X	Instrument Tray	9A268

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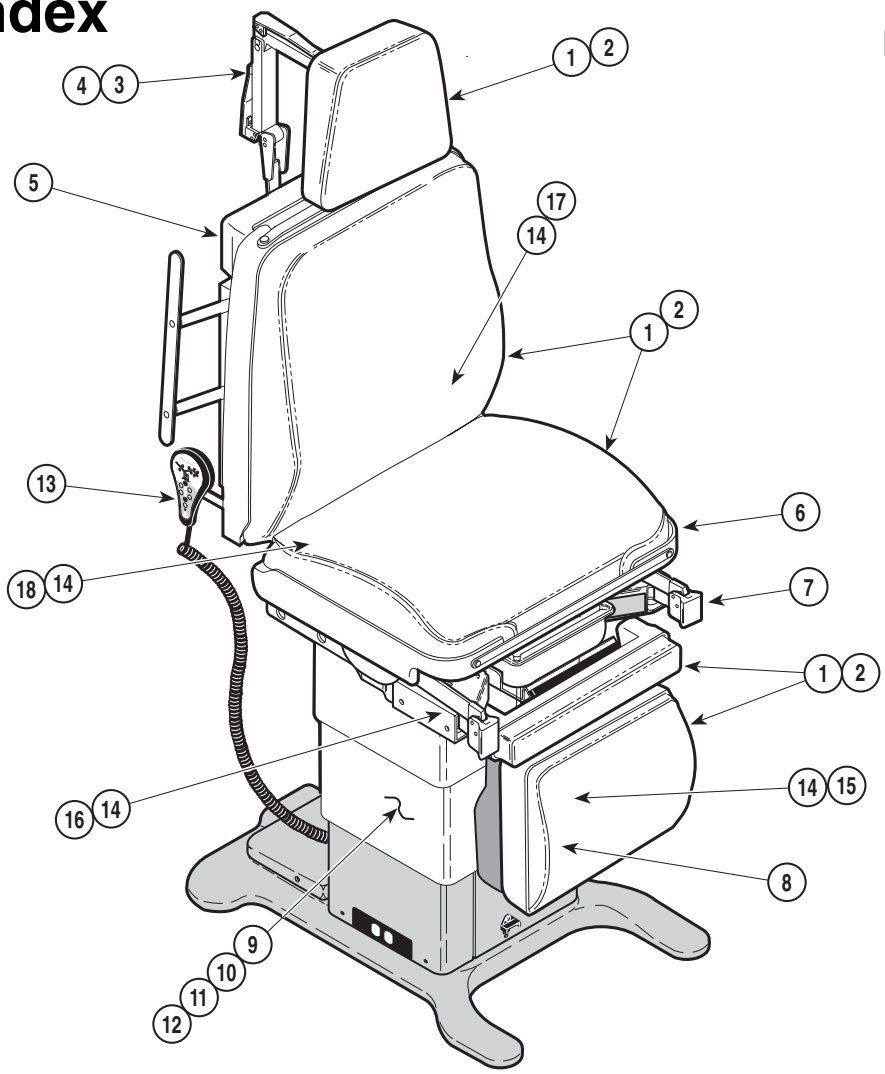

MA415500

Used on units with Serial Number JY1000 thru Present

Item	Part No.	Description	Page
	411-017	75LP Programmable Power Exam Table [115 V.] (Serial No. Prefix = "JY")	6-7
1		• Upholstery Set-Styled	6-9
2		• Upholstery Set-Plain or Embossed	6-10
3		• Headrest Components	6-11(*)
4		• • Headlock Assembly	6-12
5		• Back Components	6-13
6		• Seat Components	6-15
7		• Stirrup Assembly	6-16
8		• Leg Components	6-17(*)
9		• Base Cover Components	6-19
10		• Base Electrical Components	6-21(*)
11		• Column Components	6-24
12		• • Column Assembly	6-25
13		• Hand Control Assembly	6-28
14		• Program Position Components	6-30
15		• • Base Reducer Assembly	6-31
16		• • Foot Sensor Components	6-32
17		• • Back Sensor Components	6-33
18		• • Tilt Sensor Components	6-34
		OPTIONAL ACCESSORIES	
		Refer to MEDICAL ACCESSORY BOOK {004-0096-00}	
19	9A4300X	Chair Arm Set Assembly	9A43
20	9A5100X	Facial Pad	9A51
21	9A7700X	I.V. Pole	9A77
22	9A7800X	Vision Block Screen	9A78
23	9A8100X	Articulating Armboard	9A81
24	9A8200X	Special Procedures Armboard	9A82
25	9A8300X	Instrument Tray Assembly	9A83
26	9A8500X	Foot Rest Step	9A85
27	9A8700X	Upholstery Cover Set	9A87
28	9A14400X	Knee Crutch Assembly	9A144
29	9A15700X	Side Rail Assembly	9A157
30	9A17900X	Fixed Armboard Assembly	9A179
31	9A18200X	Welch Allyn Hanger	9A182
32	9A19800X	Round Headrest Assembly	9A198
33	9A19900X	Special Procedures Headrest Assy	9A199
34	9A20400X	Urology Accessory	9A204
35	9A20500X	Base Rail Assembly	9A205
36	9A20800X	Knee Crutch Assembly	9A208
37	9A21300X	Caster Base Assembly	9A213
38	9A21400X	Restraint Belts	9A214
39	9A22100X	One Arm Wrist Rest	9A221
40	9A22700X	Seat Rail Assembly	9A227
41	9A22900X	Siderail Socket Accessory	9A229
42	9A23600X	Foot Control Assembly	9A236
43	9A26700X	Instrument Tray Assembly	9A267
44	9A26800X	Instrument Tray	9A268

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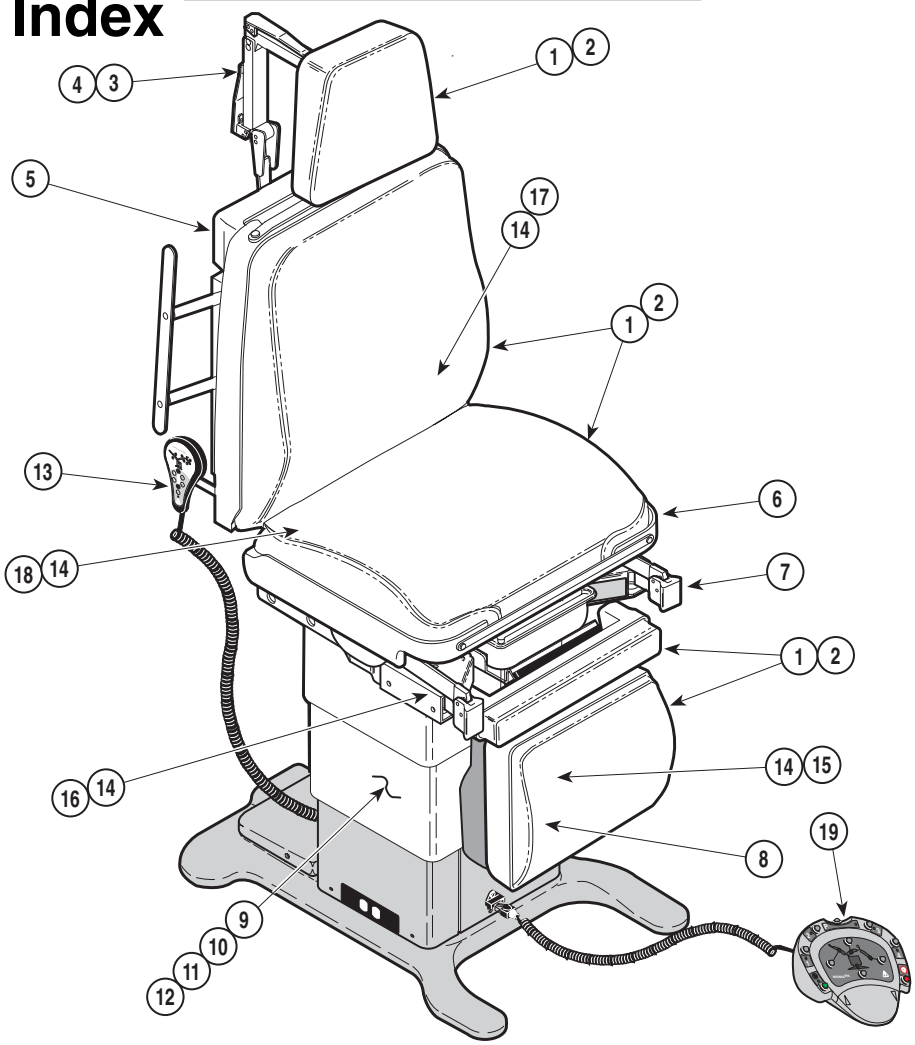

MA415501

Used on units with Serial Number LS1000 thru Present

Item	Part No.	Description	Page
	411-018	411 Programmable Power Exam Table [115 V.] (Serial No. Prefix = "LS")	6-8
1		• Upholstery Set-Styled	6-9
2		• Upholstery Set-Plain or Embossed	6-10
3		• Headrest Components	6-11(*)
4		• • Headlock Assembly	6-12
5		• Back Components	6-13
6		• Seat Components	6-15
7		• Stirrup Assembly	6-16
8		• Leg Components	6-17(*)
9		• Base Cover Components	6-19
10		• Base Electrical Components	6-21(*)
11		• Column Components	6-24
12		• • Column Assembly	6-25
13		• Hand Control Assembly	6-28
14		• Program Position Components	6-30
15		• • Base Reducer Assembly	6-31
16		• • Foot Sensor Components	6-32
17		• • Back Sensor Components	6-33
18		• • Tilt Sensor Components	6-34
19		• Foot Control Assembly	6-35
		OPTIONAL ACCESSORIES	
		Refer to MEDICAL ACCESSORY BOOK {004-0096-00}	
20	9A4300X	Chair Arm Set Assembly	9A43

Item	Part No.	Description	Page
21	9A5100X	Facial Pad	9A51
22	9A7700X	I.V. Pole	9A77
23	9A7800X	Vision Block Screen	9A78
24	9A8100X	Articulating Armboard	9A81
25	9A8200X	Special Procedures Armboard	9A82
26	9A8300X	Instrument Tray Assembly	9A83
27	9A8500X	Foot Rest Step	9A85
28	9A8700X	Upholstery Cover Set	9A87
29	9A14400X	Knee Crutch Assembly	9A144
30	9A15700X	Side Rail Assembly	9A157
31	9A17900X	Fixed Armboard Assembly	9A179
32	9A18200X	Welch Allyn Hanger	9A182
33	9A19800X	Round Headrest Assembly	9A198
34	9A19900X	Special Procedures Headrest Assy	9A199
35	9A20400X	Urology Accessory	9A204
36	9A20500X	Base Rail Assembly	9A205
37	9A20800X	Knee Crutch Assembly	9A208
38	9A21300X	Caster Base Assembly	9A213
39	9A21400X	Restraint Belts	9A214
40	9A22100X	One Arm Wrist Rest	9A221
41	9A22700X	Seat Rail Assembly	9A227
42	9A22900X	Siderail Socket Accessory	9A229
43	9A23600X	Foot Control Assembly	9A236
44	9A26700X	Instrument Tray Assembly	9A267
45	9A26800X	Instrument Tray	9A268

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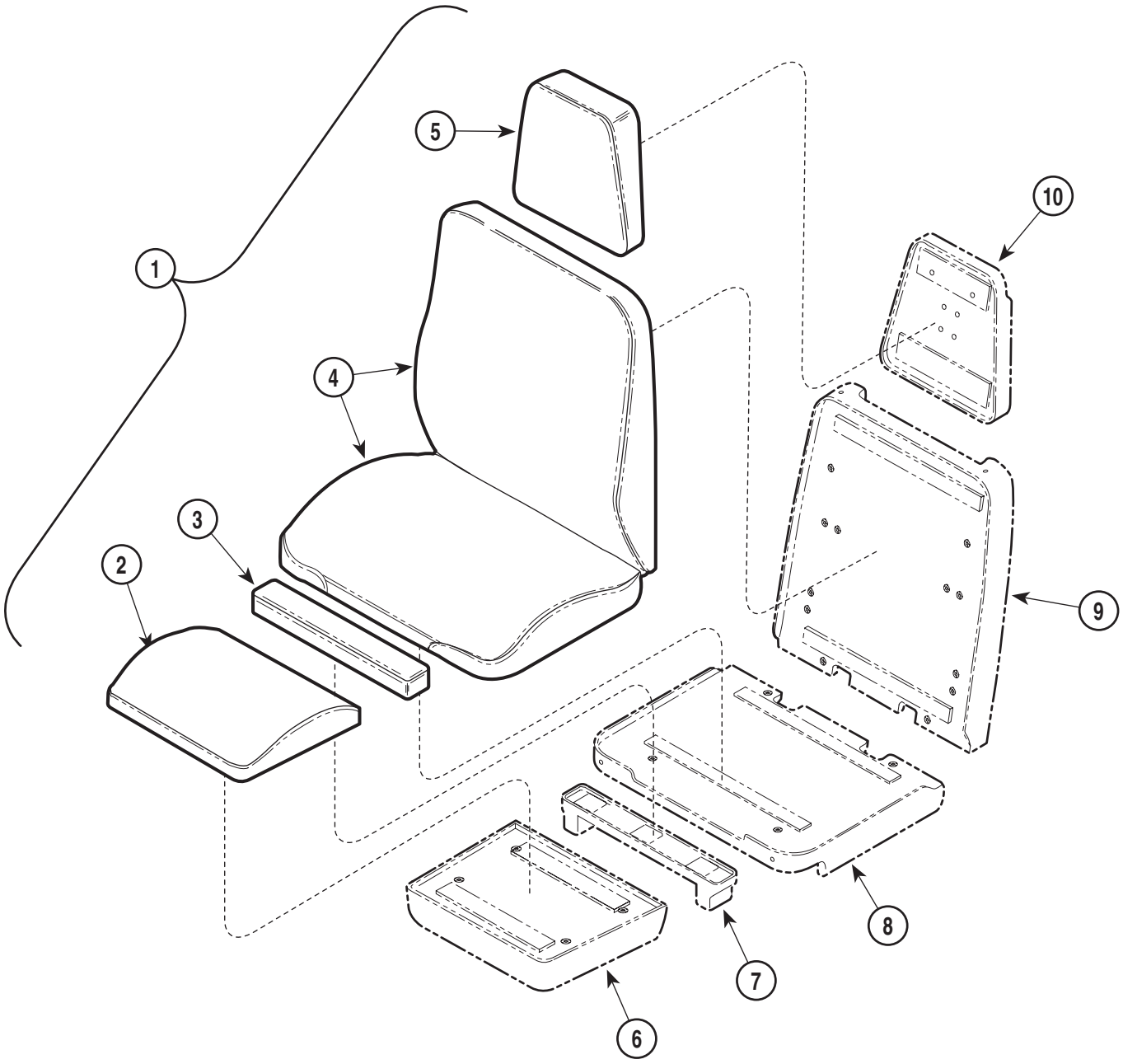
Upholstery Set - Styled



Color Selector.....www.midmark.com

MA344500

Used on units with Serial Number GT1000, GV1000, JX1000, JY1000, HY1000, HZ1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
	ATTENTION:	***Replace -XX with Color Option***	
1	002-0486-XX	Styled Upholstery Set (*Specify Color *[includes items 2 thru 5]*)	1
2	• 028-0414-XX	Upholstered Foot Rest	1
3	• 028-0413-XX	Upholstered Leg Rest	1
4	• 028-0412-XX	Upholstered Back and Seat Rest	1
5	• 028-0411-XX	Upholstered Head Rest	1
6		Refer to "*Leg Components*"	Ref
7		Refer to "*Leg Components*"	Ref
8		Refer to *"Seat Components"*	Ref
9		Refer to *"Back Components"*	Ref
10		Refer to *"Head Rest Components"*	Ref

* Click on the Color Selector link above to see available colors.

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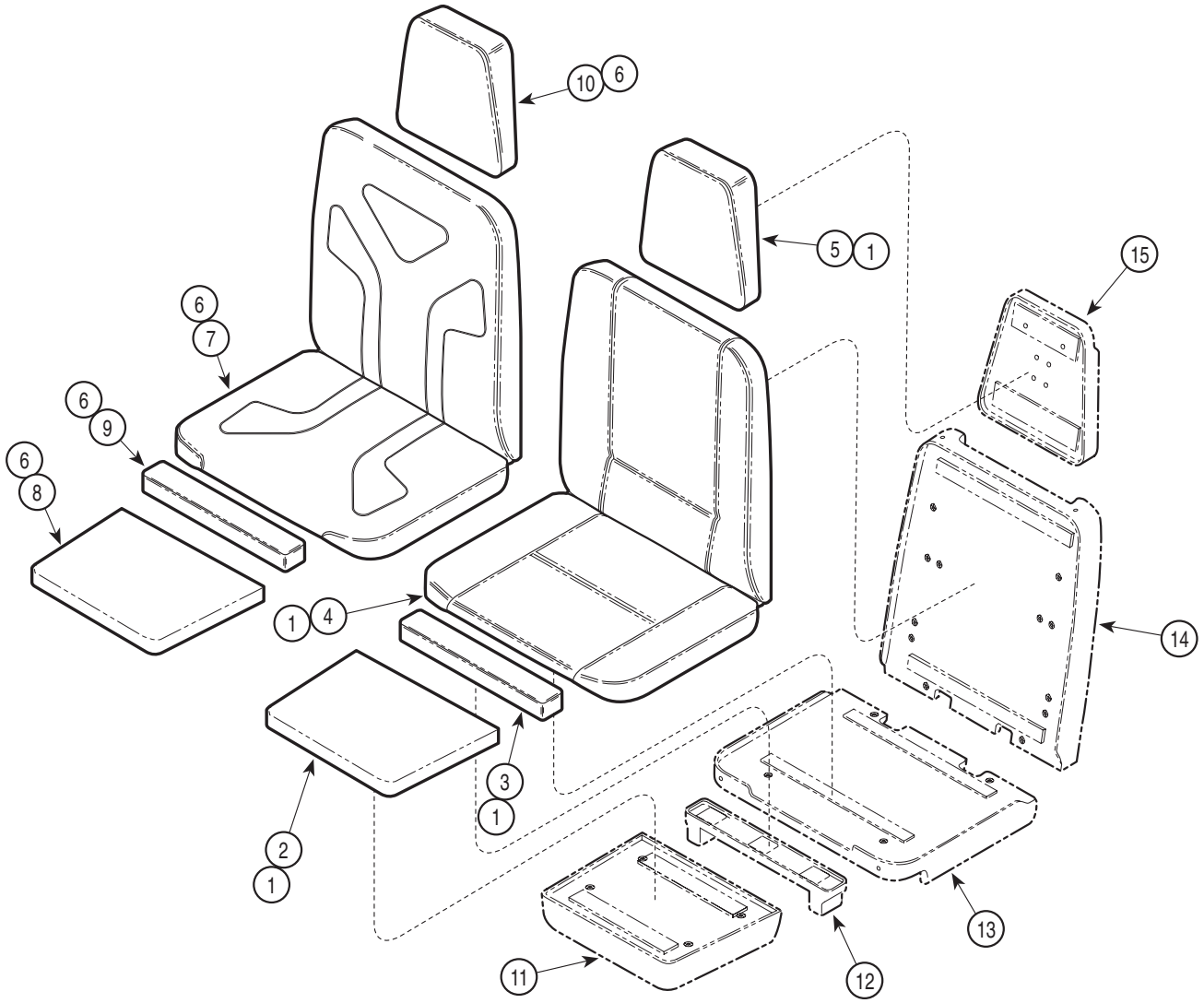
Upholstery Set - Plain or Embossed



Color Selector.....www.midmark.com

MA344603

Used on units with Serial Number GT1000, GV1000, JX1000, JY1000, HY1000, HZ1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
	ATTENTION:	***Replace -XX with Color Option***	
1	002-0485-XX	Styled Upholstery Set (Includes Items 2 thru 5) {*Special Color}	1
2	• 028-0410-XX	Upholstered Foot Rest {*Specify Color}	1
3	• 028-0409-XX	Upholstered Leg Rest {*Specify Color}	1
4	• 028-0415-XX	Upholstered Back and Seat Rest {*Specify Color}	1
5	• 028-0424-XX	Upholstered Head Rest {*Specify Color}	1
6	002-0622-XX	Embossed Upholstery Set (Includes Items 7 thru 10) {*Special Color}	1
7	• 028-0497-XX	Upholstered Back and Seat Rest {Specify Color}	1
8	• 028-0496-XX	Upholstered Foot Rest {*Specify Color}	1
9	• 028-0495-XX	Upholstered Leg Rest {*Specify Color}	1
10	• 028-0498-XX	Upholstered Head Rest {*Specify Color}	1
11		Refer to “LegComponents”	Ref
12		Refer to “Leg Components”	Ref
13		Refer to “Seat Components”	Ref
14		Refer to “Back Components”	Ref
15		Refer to “Head Rest Components”	Ref

* Click on the Color Selector link above to see available colors.

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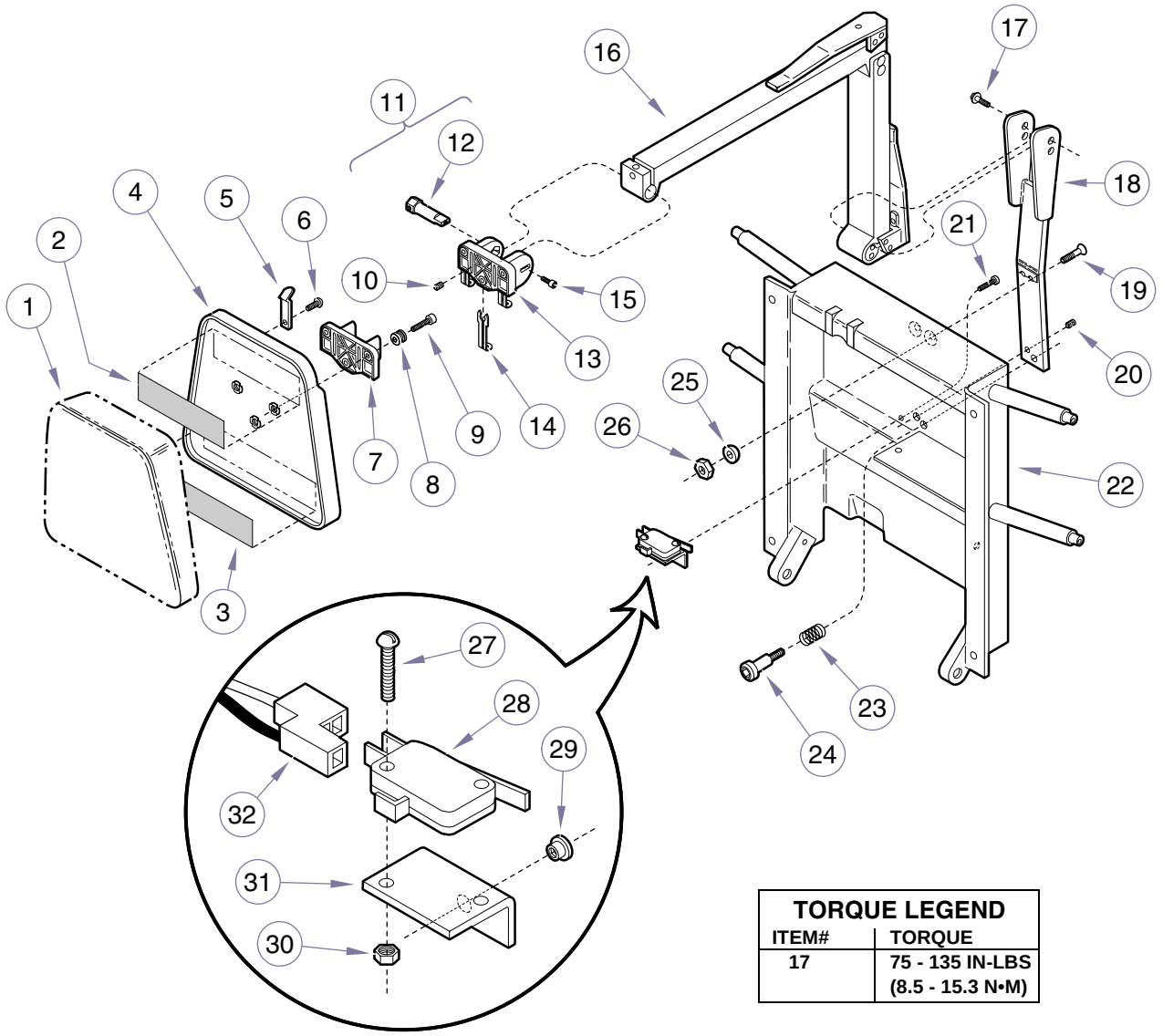
Headrest Components



TORQUE LEGEND	
ITEM#	TORQUE
17	75 - 135 IN-LBS (8.5 - 15.3 N•M)

MA344700i

Used on units with Serial Number GT1000 thru GT2266, GV1000 thru GV1456, JX1000 thru JX4502, JY1000 thru JY1889 and LS1000 thru LS1027

Item	Part No.	Description	Qty.
1		Refer to: *"Upholstery Set"*	Ref
2	053-0131-08	Velcro Hook Tape	1
	042-0040-00	Staples (Not Shown)	AR
3	053-0131-02	Velcro Hook Tape	1
	042-0040-00	Staples (Not Shown)	AR
4	029-1788-00	Head Board Assembly	1
5	058-0001-03	Painted Bag Clip	2
6	040-0006-00	Screw	2
7	053-0582-00	Headboard Pillow Mount	1
8	042-0137-00	Upholstery Mount Stud	3
9	040-0010-13	Screw	3
10	040-0250-26	Set Screw (Apply Loctite #042-0024-02)	1
11	002-0715-00	Head Pivot Kit *(incl. items 12 thru 15)*	1
12	• n/a	• Headboard Pivot Pin	1
13	• n/a	• Headboard Pivot Mount	1
14	• 016-0542-01	• Slide Bar	3
15	• 040-0250-79	• Screw	1
16		Refer to: *"Headlock Assembly"*	Ref
17	040-0250-133	Screw (Apply Loctite #042-0025-00)	4
18	030-1060-00	Headlock Bar Weldment	1
19	040-0250-115	Screw	2
20	040-0250-70	Set Screw (Apply Loctite #042-0025-00)	1
21	040-0250-129	Screw	1
22		Refer to: *"Back Components"*	Ref
23	025-0049-01	Spring	1
24	042-0014-43	Shoulder Screw (Apply Loctite #042-0025-00)	1
25	045-0001-90	Spherical Washer	1
26	041-0250-01	Nut	2
27	040-0004-09	Screw	2
28	015-1024-00	Limit Switch	1
29	042-0045-01	Nutsert	1
30	041-0004-01	Nut	2
31	050-3593-00	Switch Bracket	1
32		Headlock Limit Switch Harness (Refer to "Wiring Diagram")	Ref

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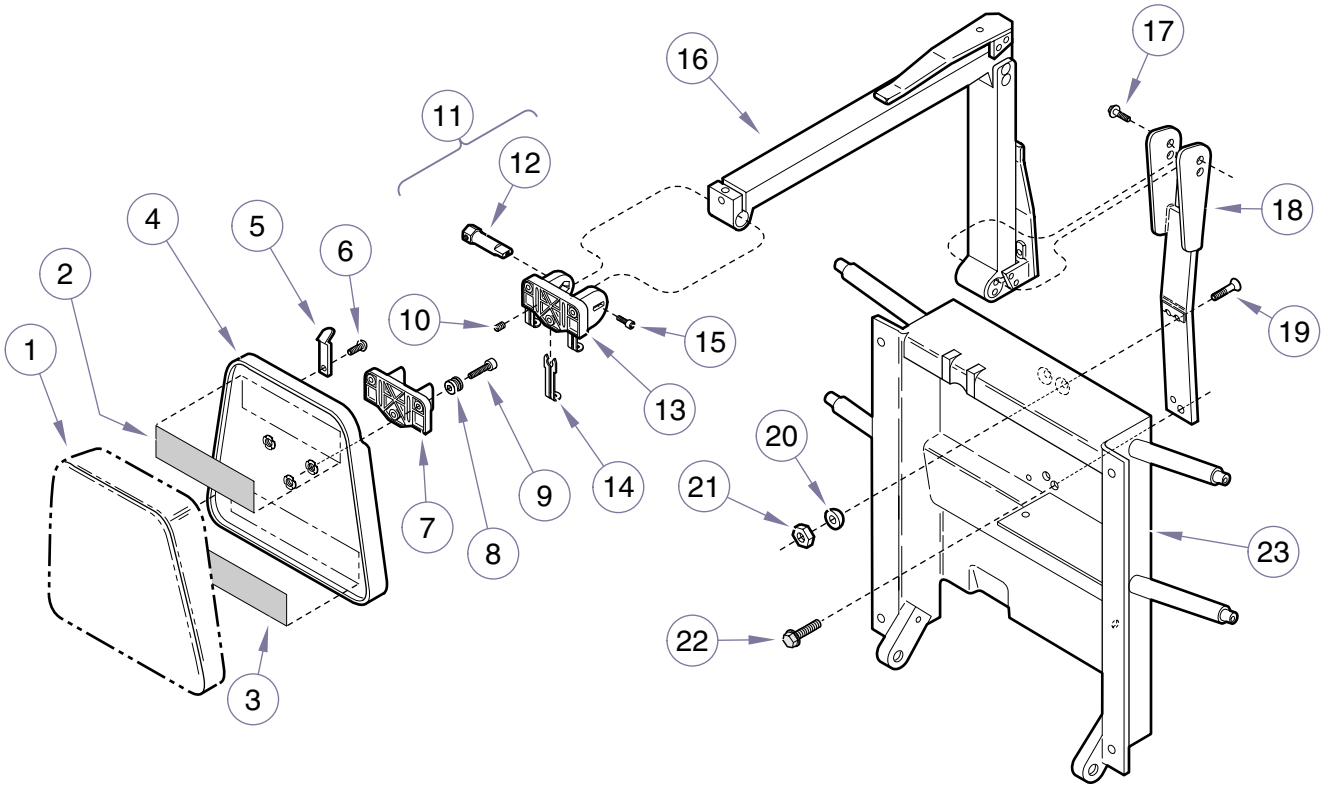
Headrest Components



TORQUE LEGEND	
ITEM#	TORQUE
17	75 - 135 IN-LBS (8.5 - 15.3 N•M)

MA344701i

Used on units with Serial Number HY1000 thru HY1014 and HZ1000 thru HZ1052

Item	Part No.	Description	Qty.
1		Refer to: *"Upholstery Set"*	Ref
2	053-0131-08	Velcro Hook Tape	1
	042-0040-00	Staples (Not Shown)	AR
3	053-0131-02	Velcro Hook Tape	1
	042-0040-00	Staples (Not Shown)	AR
4	029-1788-00	Head Board Assembly	1
5	058-0001-03	Painted Bag Clip	2
6	040-0006-00	Screw	2
7	053-0582-00	Headboard Pillow Mount	1
8	042-0137-00	Upholstery Mount Stud	3
9	040-0010-13	Screw	3
10	040-0250-26	Set Screw (Apply Loctite #042-0024-02)	1
11	002-0715-00	Head Pivot Kit *(incl. items 12 thru 15)*	1

Item	Part No.	Description	Qty.
12	• n/a	• Headboard Pivot Pin	1
13	• n/a	• Headboard Pivot Mount	1
14	• 016-0542-01	• Slide Bar	3
15	• 040-0250-79	• Screw	1
16		Refer to: *"Headlock Assembly"*	Ref
17	040-0250-133	Screw (Apply Loctite #042-0025-00)	4
18	030-1060-00	Headlock Bar Weldment	1
19	040-0250-115	Screw	2
20	045-0001-55	Washer	2
21	041-0250-01	Nut	2
22	040-0312-25	Screw	1
23		Refer to: *"Back Components"*	Ref

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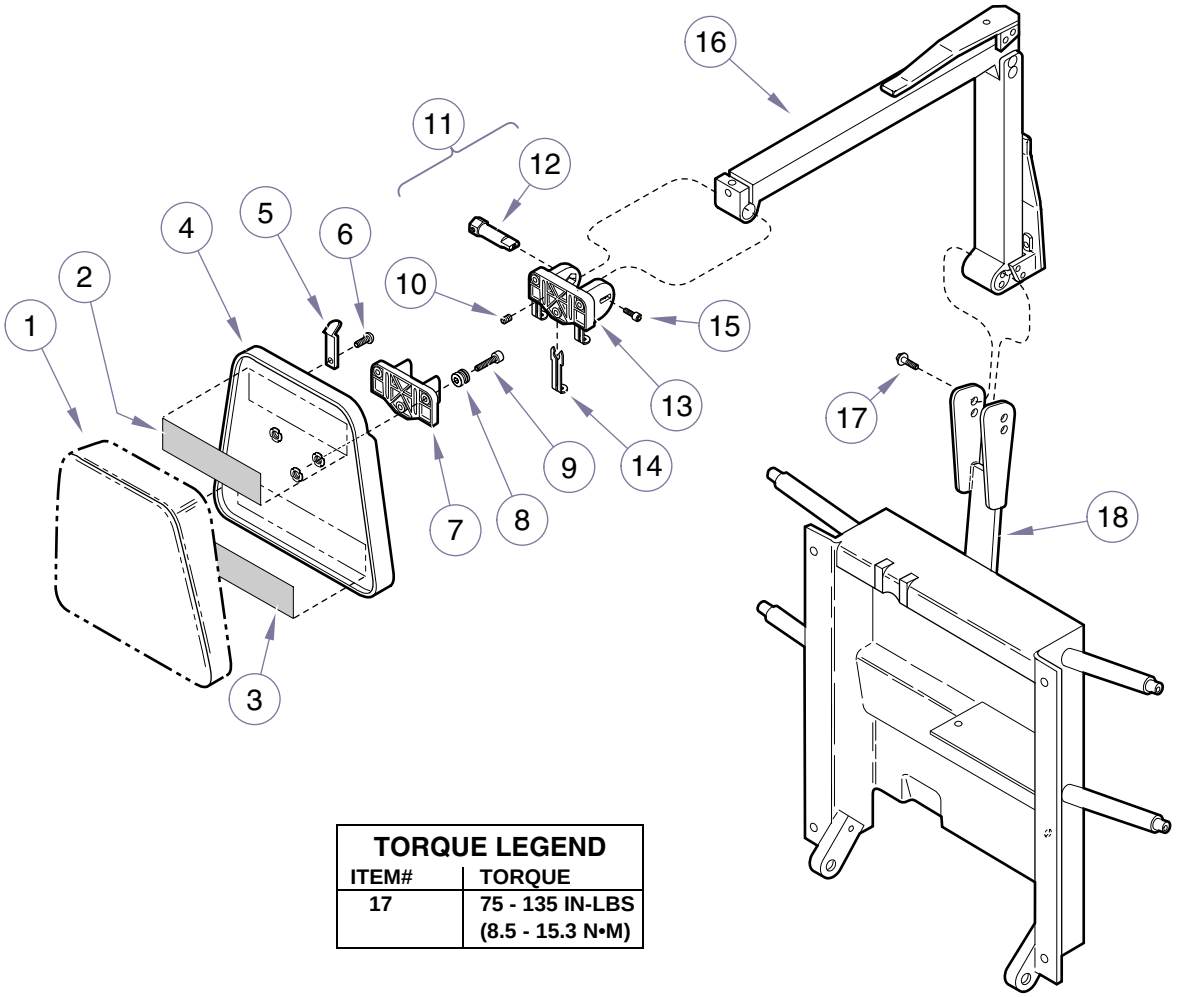
Headrest Components



TORQUE LEGEND	
ITEM#	TORQUE
17	75 - 135 IN-LBS (8.5 - 15.3 N•M)

MA534000i

Used on units with Serial Number JX4503 thru JX5520, JY1890 thru JY2213, LS1028 thru LS1088, HY1015 thru HY1035 and HZ1053 thru HZ1055

Item	Part No.	Description	Qty.
1		Refer to: *"Upholstery Set"*	Ref
2	053-0131-08	Velcro Hook Tape	1
	042-0040-00	Staples (Not Shown)	AR
3	053-0131-02	Velcro Hook Tape	1
	042-0040-00	Staples (Not Shown)	AR
4	029-1788-00	Head Board Assembly	1
5	058-0001-03	Painted Bag Clip	2
6	040-0006-00	Screw	2
7	053-0582-00	Headboard Pillow Mount	1
8	042-0137-00	Upholstery Mount Stud	3
9	040-0010-13	Screw	3
10	040-0250-26	Set Screw (Apply Loctite #042-0024-02)	1
11	002-0715-00	Head Pivot Kit *(incl. items 12 thru 15)*	1
12	• n/a	• Headboard Pivot Pin	1
13	• n/a	• Headboard Pivot Mount	1
14	• 016-0542-01	• Slide Bar	3
15	• 040-0250-79	• Screw	1
16		Refer to: *"Headlock Assembly"*	Ref
17	040-0250-133	Screw (Apply Loctite #042-0025-00)	4
18		Refer to: *"Back Components"*	Ref

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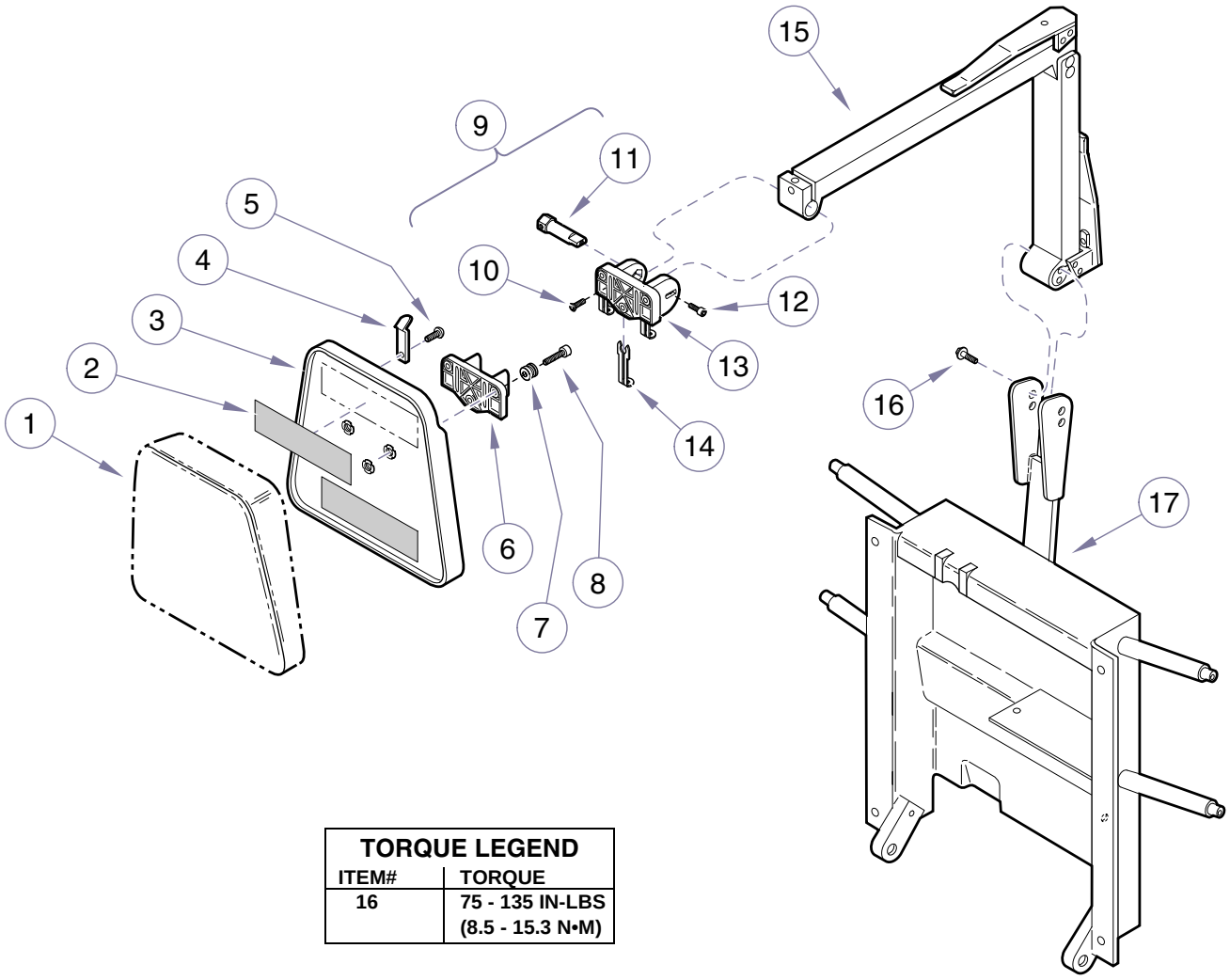
Headrest Components



TORQUE LEGEND	
ITEM#	TORQUE
16	75 - 135 IN-LBS (8.5 - 15.3 N•M)

MA534002

Used on units with Serial Number GT2267, GV1457, JX5521, JY2214, LS1089, HY1036 and HZ1056 thru Present

Item	Part No.	Description	Qty.
1		Upholstered Headboard (Refer to "Upholstery Set" Elsewhere)	Ref
2	053-0131-08	Velcro Hook Tape	2
	042-0040-00	Staples (Not Shown)	AR
3	029-1788-00	Head Board Assembly	1
4	058-0001-03	Painted Bag Clip	2
5	040-0006-00	Screw	2
6	053-0582-00	Headboard Pillow Mount	1
7	042-0137-00	Upholstery Mount Stud	3
8	040-0010-13	Screw	3
9	002-0715-00	Head Pivot Kit (incl. items 10 thru 14)	1
10	• 040-0008-35	• Screw (Apply Loctite #042-0024-02)	1
11	• 057-0528-00	• Headboard Pivot Pin	1
12	• 040-0250-79	• Screw	1
13	• n/a	• Headboard Pivot Mount	1
14	• 016-0542-01	• Slide Bar	3
15		Headlock Assembly (Refer to "Headlock Assembly")	Ref
16	040-0250-133	Screw (Apply Loctite #042-0025-00)	4
17		Back Weldment (Refer to "Back Components")	Ref

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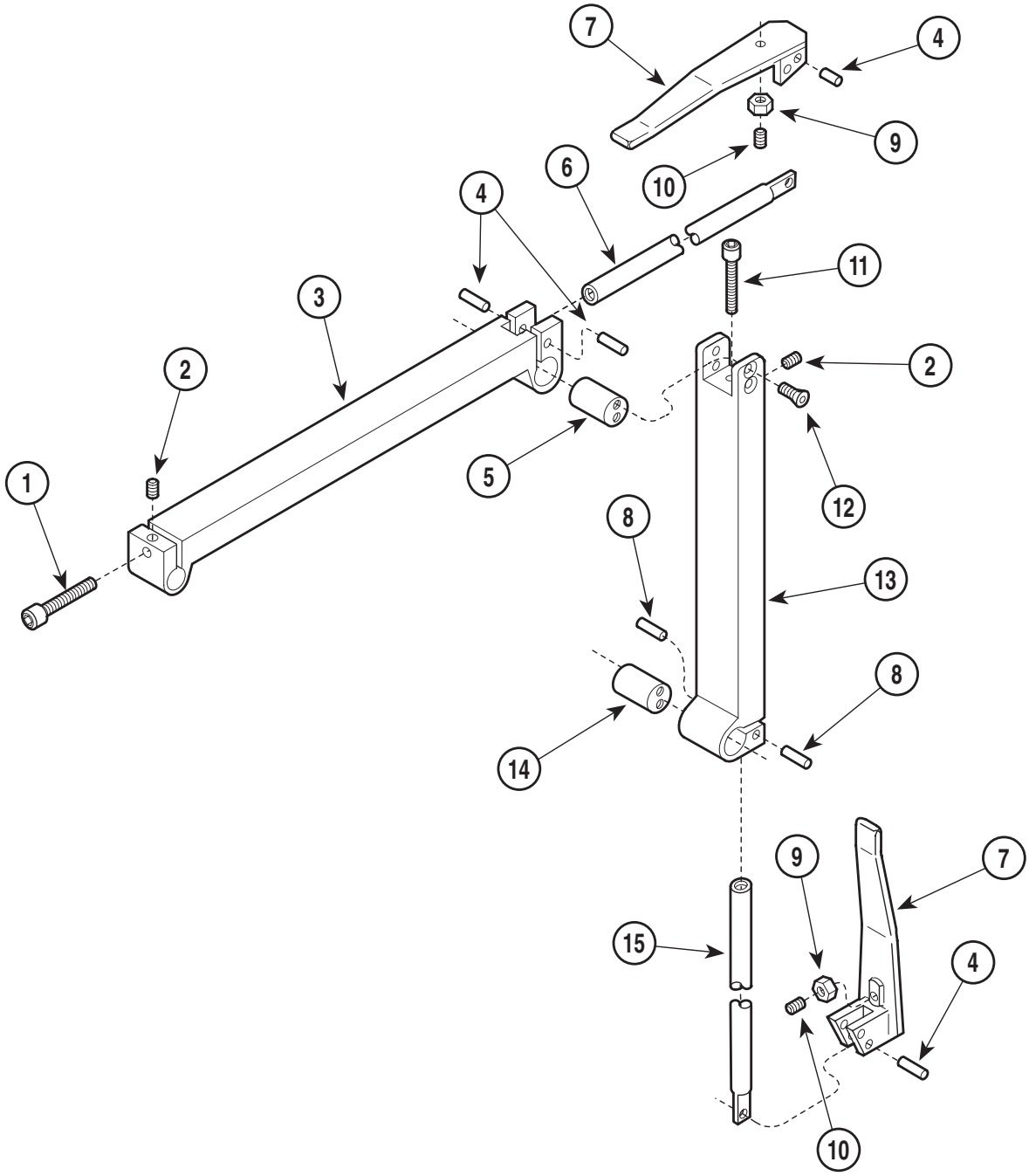
Headlock Assembly



MA344800

Used on units with Serial Number GT1000 & GV1000 thru Present, JX1000 thru JX10516, JY1000 thru JY3904, HY1000 thru HY1077, HZ1000 thru HZ1159 and LS1000 thru LS1539

Item	Part No.	Description	Qty.
	029-1100-04	Two Arm Headlock Assembly (Includes Items 1 thru 15)	1
1	• *(N.S.P.)*	• Screw	1
2	• *(N.S.P.)*	• Set Screw	2
3	• *(N.S.P.)*	• Headlock Head	1
4	• *(N.S.P.)*	• Dowel Pin	4
5	• *(N.S.P.)*	• Pivot Bar	1
6	• *(N.S.P.)*	• Draw Bar	1
7	• *(N.S.P.)*	• Head Pivot Handle Weldment	2
8	• *(N.S.P.)*	• Dowel Pin	2
9	• *(N.S.P.)*	• Jam Nut	2
10	• *(N.S.P.)*	• Set Screw	2
11	• *(N.S.P.)*	• Screw	1
12	• *(N.S.P.)*	• Screw (Apply Loctite #042-0024-00)	4
13	• *(N.S.P.)*	• Headlock Base	1
14	• *(N.S.P.)*	• Pivot Bar	1
15	• *(N.S.P.)*	• Draw Bar	1

(N.S.P.) Denotes "Non Servicable Part"

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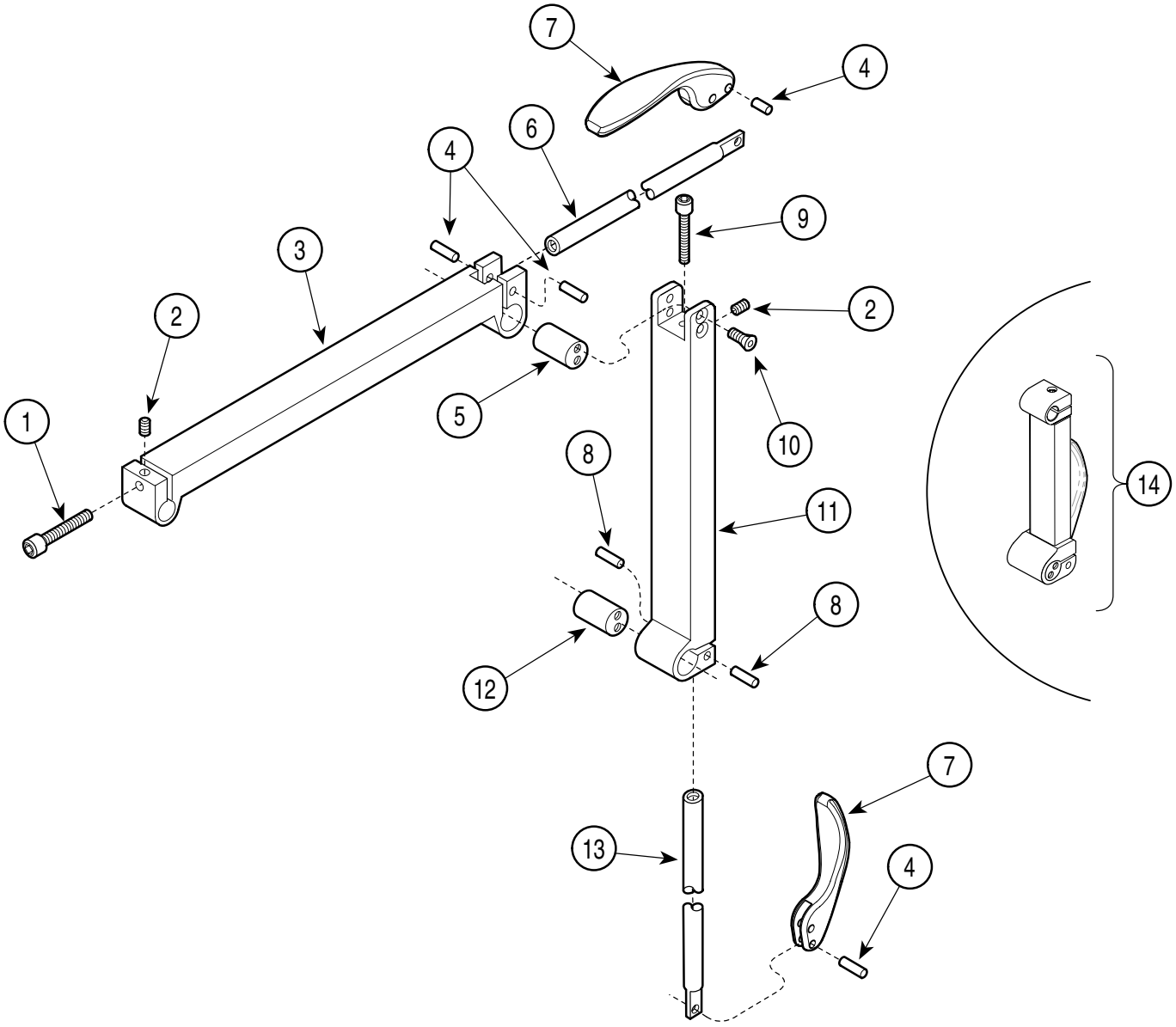
Headlock Assembly



MA629701i

Used on units with Serial Number JX10517, JY3905, HY1078, HZ1160 and LS1540 thru Present

Item	Part No.	Description	Qty.
	029-3063-00	Two Arm Headlock Assembly (Includes Items 1 thru 13)	1
1	• *(N.S.P.)*	• Screw	1
2	• *(N.S.P.)*	• Set Screw	2
3	• *(N.S.P.)*	• Headlock Head	1
4	• *(N.S.P.)*	• Dowel Pin	4
5	• *(N.S.P.)*	• Pivot Bar	1
6	• *(N.S.P.)*	• Draw Bar	1
7	• *(N.S.P.)*	• Over Center Handle	2
8	• *(N.S.P.)*	• Dowel Pin	2
9	• *(N.S.P.)*	• Screw	1
10	• *(N.S.P.)*	• Screw (Apply Loctite #042-0024-00)	4
11	• *(N.S.P.)*	• Headlock Base	1
12	• *(N.S.P.)*	• Pivot Bar	1
13	• *(N.S.P.)*	• Draw Bar	1
14	002-1007-00	Single Arm Headlock *(includes item 14 only)*	1

(N.S.P.) Denotes "Non Servicable Part"

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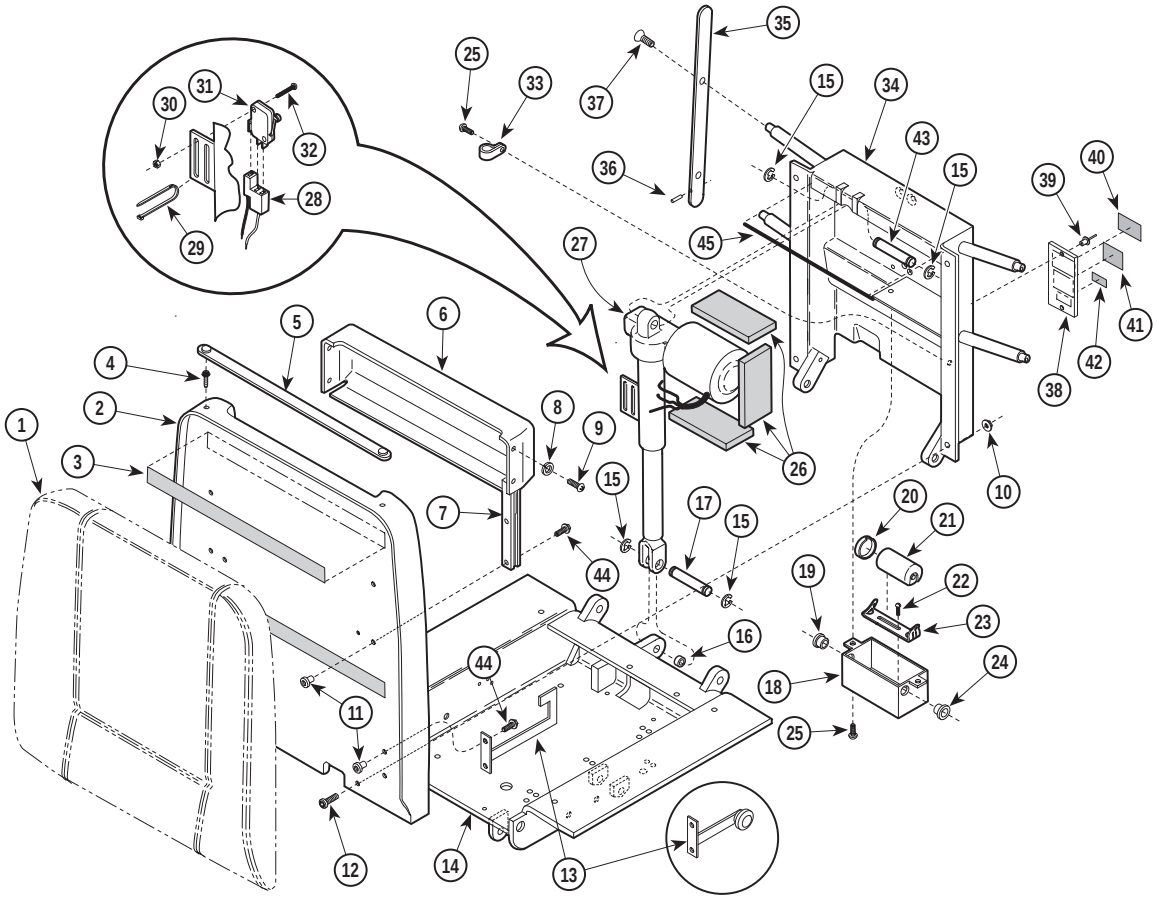
Back Components (115 VAC Units)



MA344901

Used on units with Serial Number GT1000 thru GT2266, GV1000 thru GV1456, JX1000 thru JX4502, JY1000 thru JY1889 and LS1000 thru LS1027

Item	Part No.	Description	Qty.
1		Upholstered Back and Seat Rest (Refer to "Upholstery Set" Elsewhere)	Ref
2	029-1994-00	Backrest Assembly	1
3	053-0131-04	Velcro Hook Tape	2
	042-0040-00	Staples (Not Shown)	AR
4	016-0022-00	Stud	2
5	002-0146-00	Paper Tear Strip Assembly	1
6	053-0209-00	Paper Roll Holder	1
7	016-0579-01	L.H. Paper Roll Slide (Shown)	1
	016-0579-00	R.H. Paper Roll Slide (Not Shown)	1
8	045-0001-39	Lockwasher	4
9	040-0008-29	Screw	4
10	041-0250-17	Nut	4
11	042-0060-01	Joint Connecting Nut	6
12	042-0059-01	Joint Connecting Bolt	4
13	050-3289-10	Hand Control Bracket (Used only on units with Serial Number Prefix "GT" & "GV")	1
	029-2107-00	Hand Control Bracket (Used only on units with Serial No. Prefix "JX" "JY" & "LS")	1
14		Seat Weldment (Refer to "Seat Components" Elsewhere)	Ref
15	042-0007-02	E-Ring	4
16	016-0149-09	Sleeve Bearing	1
17	042-0048-01	Clevis Pin	1
18	050-3298-00	Back Capacitor Cover	1
19	053-0068-07	Snap Bushing	1
20	015-0413-01	Capacitor Cap	1
21	015-0437-03	Capacitor	1
22	040-0010-62	Screw	2
23	015-0412-00	Capacitor Bracket	1
24	053-0068-01	Snap Bushing	1
25	040-0010-47	Screw	3
26	054-0085-04	Sound Damp	3
27	002-0496-00	Back Actuator Assembly	1
28		Back Actuator Harness (Refer to "Wiring Diagram" Elsewhere)	Ref
29	015-0013-02	Cable Tie	2
30	041-0004-01	Nut	2
31	015-0476-00	Limit Switch	1
32	040-0004-09	Screw	2
33	015-0014-02	Cable Clamp	1
34	030-1028-00	Back Weldment	1
35	051-0771-00	Siderail Bar	2
36	042-0009-12	Roll Pin	2
37	040-0375-45	Screw	4
38	050-3424-00	Label Mounting Plate	1
39	042-0010-15	Pop Rivet	2
40		Serial Number Label	1
41	061-0620-00	U.L./C.U.L. Label	1
42	061-0291-00	Patent Number Label	1
43	042-0048-00	Clevis Pin	1
44	040-0250-88	Whizlock Screw	6
45	053-0717-00	Outer Shroud Seal	1

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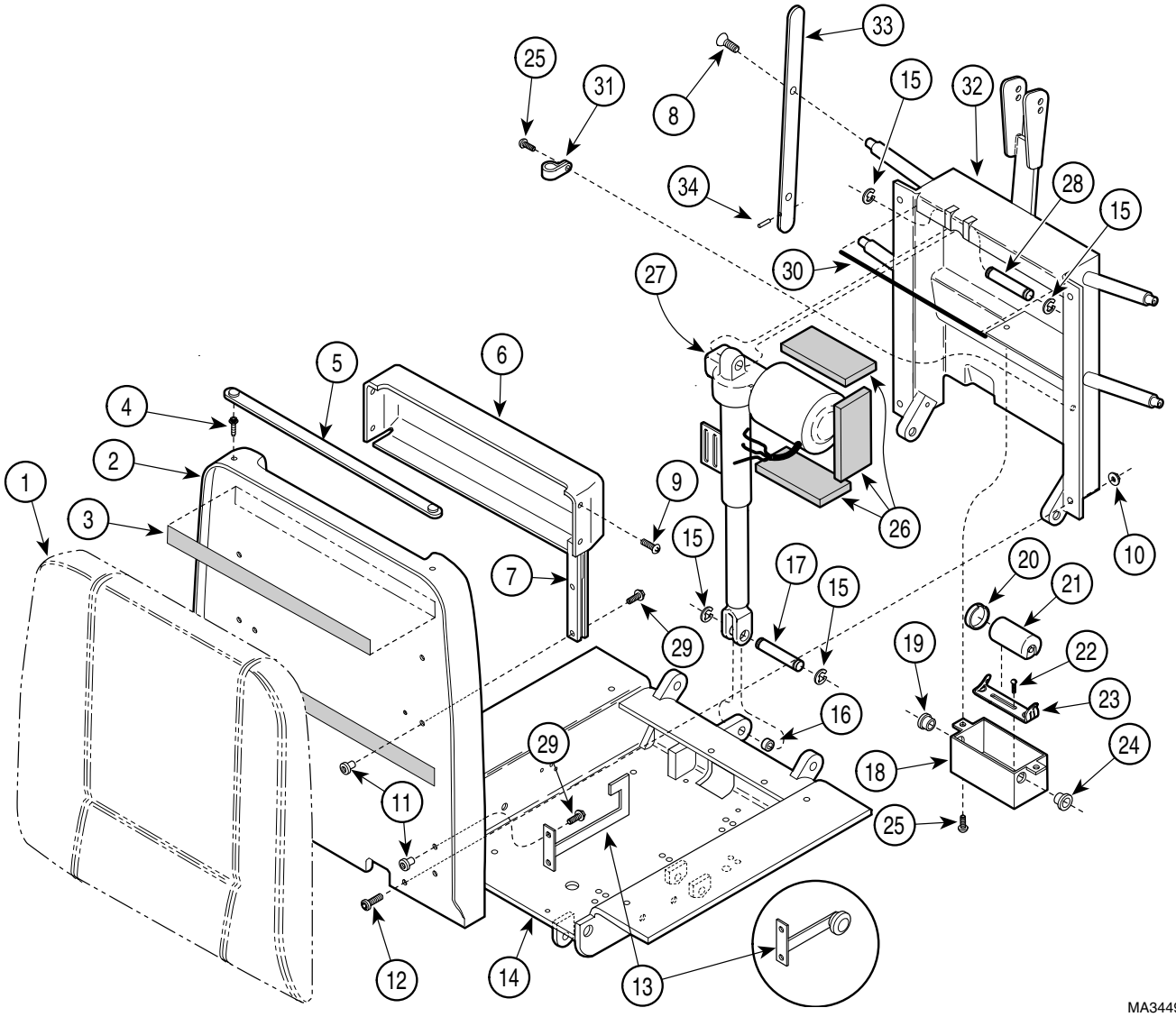
Back Components (115 VAC Units)



MA344906i

Used on units with Serial Number GT2267, GV1457, JX4503, JY1890, and LS1028 thru Present

Item	Part No.	Description	Qty.
1		Upholstered Back and Seat Rest (Refer to "Upholstery Set" Elsewhere)	Ref
2	029-1994-00	Backrest Assembly	1
3	053-0131-04	Velcro Hook Tape	2
	042-0040-00	Staples (Not Shown)	AR
4	016-0022-00	Stud	2
5	002-0146-00	Paper Tear Strip Assembly	1
6	053-0209-00	Paper Roll Holder	1
7	016-0579-01	L.H. Paper Roll Slide (Shown)	1
	016-0579-00	R.H. Paper Roll Slide (Not Shown)	1
8	040-0375-45	Screw	4
9	040-0008-78	Screw	4
10	041-0250-17	Nut	4
11	042-0060-01	Joint Connecting Nut	6
12	042-0059-01	Joint Connecting Bolt	4
13	050-3289-10	Hand Control Bracket (Used only on units with Serial Number Prefix "GT" & "GV")	1
	029-2107-00	Hand Control Bracket (Used only on units with Serial No. Prefix "JX" "JY" & "LS")	1
14		Seat Weldment (Refer to "Seat Components" Elsewhere)	Ref
15	042-0007-02	E-Ring	4
16	016-0149-09	Sleeve Bearing	1
17	042-0048-01	Clevis Pin	1
18	050-3298-00	Back Capacitor Cover	1
19	053-0068-07	Snap Bushing	1
20	015-0413-01	Capacitor Cap	1
21	015-0437-03	Capacitor	1
22	040-0010-62	Screw	2
23	015-0412-00	Capacitor Bracket	1
24	053-0068-01	Snap Bushing	1
25	040-0010-47	Screw	3
26	054-0085-04	Sound Damp	3
27	002-0496-00	Back Actuator Assembly	1
28	042-0048-00	Clevis Pin	1
29	040-0250-88	Whizlock Screw	6
30	053-0717-00	Outer Shroul Seal	1
31	015-0014-02	Cable Clamp	1
32	030-1219-00	Back Weldment	1
33	051-0771-00	Siderail Bar	2
34	042-0009-12	Roll Pin	2

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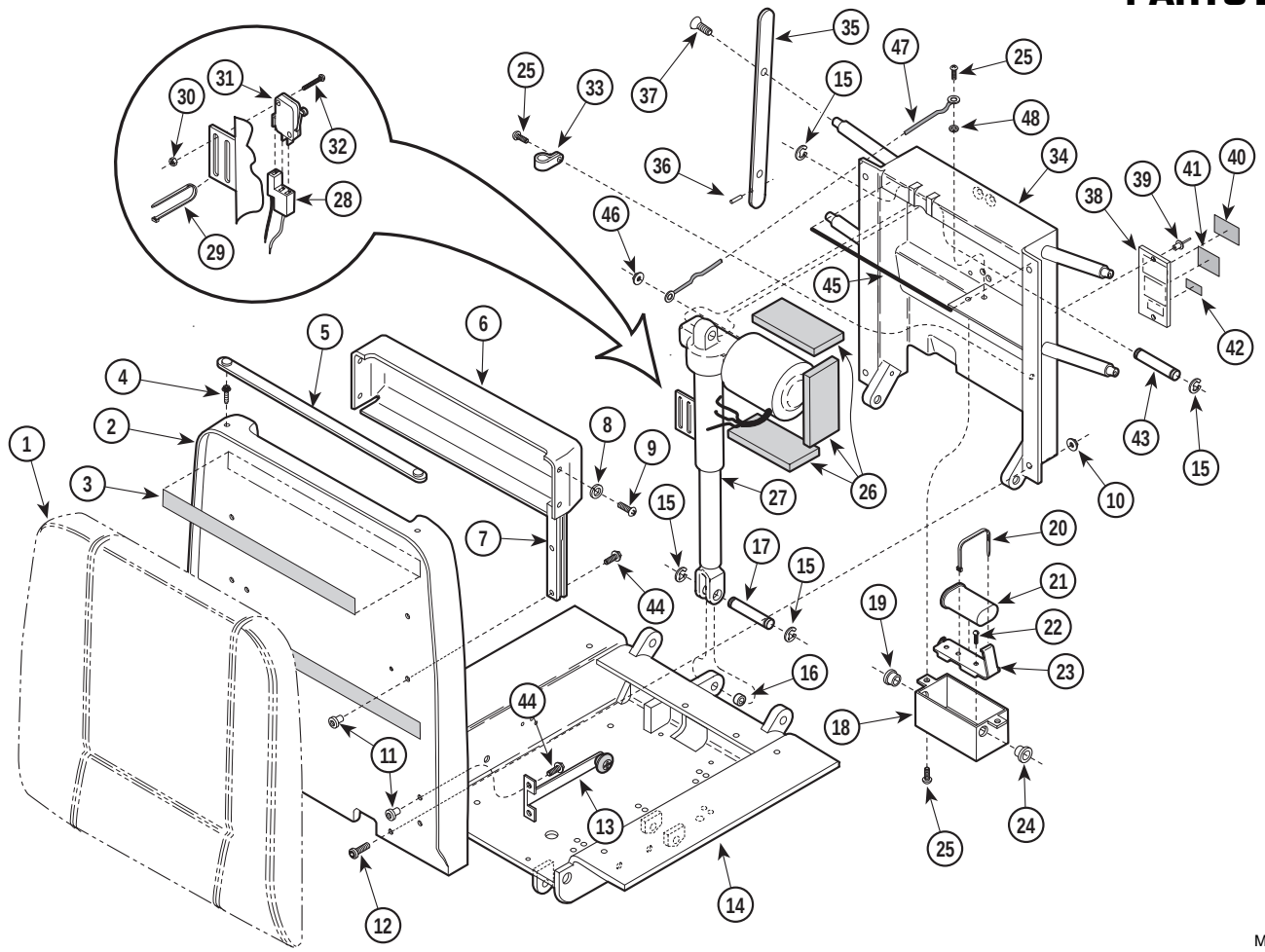
Back Components (230 VAC Units)



MA489700

Used on units with Serial Number HY1000 thru HY1014 and HZ1000 thru HZ1052

Item	Part No.	Description	Qty.
1		Upholstered Back and Seat Rest (Refer to “Upholstery Set” Elsewhere)	Ref
2	029-1994-00	Backrest Assembly	1
3	053-0131-04	Velcro Hook Tape	2
	042-0040-00	Staples (Not Shown)	
4	016-0022-00	Stud	2
5	002-0146-00	Paper Tear Strip Assembly	1
6	053-0209-00	Paper Roll Holder	1
7	016-0579-01	L.H. Paper Roll Slide (Shown)	1
	016-0579-00	R.H. Paper Roll Slide (Not Shown)	1
8	045-0001-39	Lockwasher	4
9	040-0008-29	Screw	4
10	041-0250-17	Nut	4
11	042-0060-01	Joint Connecting Nut	6
12	042-0059-01	Joint Connecting Bolt	4
13	029-2107-00	Hand Control Mounting Bracket Assy.	1
14		Seat Weldment (Refer to “Seat Components” Elsewhere)	Ref
15	042-0007-02	E-Ring	4
16	016-0149-09	Sleeve Bearing	1
17	042-0048-01	Clevis Pin	1
18	050-3298-00	Back Capacitor Cover	1
19	053-0068-07	Snap Bushing	1
20	015-0016-00	Cable Tie	1
21	015-0723-00	Capacitor	1
22	040-0010-62	Screw	2
23	050-3755-00	Capacitor Bracket	1
24	053-0068-01	Snap Bushing	1
25	040-0010-47	Screw	4
26	054-0085-04	Sound Damp	3
27	002-0496-01	Back Actuator Assembly	1
28		Back Actuator Harness (Refer to “Wiring Diagram” Elsewhere)	Ref
29	015-0013-02	Cable Tie	2
30	041-0004-01	Nut	2
31	015-0476-00	Limit Switch	1
32	040-0004-09	Screw	2
33	015-0014-02	Cable Clamp	1
34	030-1028-00	Back Weldment	1
35	051-0771-00	Siderail Bar	2
36	042-0009-12	Roll Pin	2
37	040-0375-45	Screw	4
38	050-3424-00	Label Mounting Plate	1
39	042-0010-15	Pop Rivet	2
40		Serial Number Label	1
41	061-0620-00	U.L./C.U.L. Label	1
42	061-0291-00	Patent Number Label	1
43	042-0048-00	Clevis Pin	1
44	040-0250-79	Whizlock Screw	6
45	053-0717-00	Outer Shroul Seal	1
46	041-0010-01	Locknut (Program. Only)	1
47	015-0082-04	Grounding Braid (Program. Only)	1
48	045-0001-31	Lockwasher (Program. Only)	1

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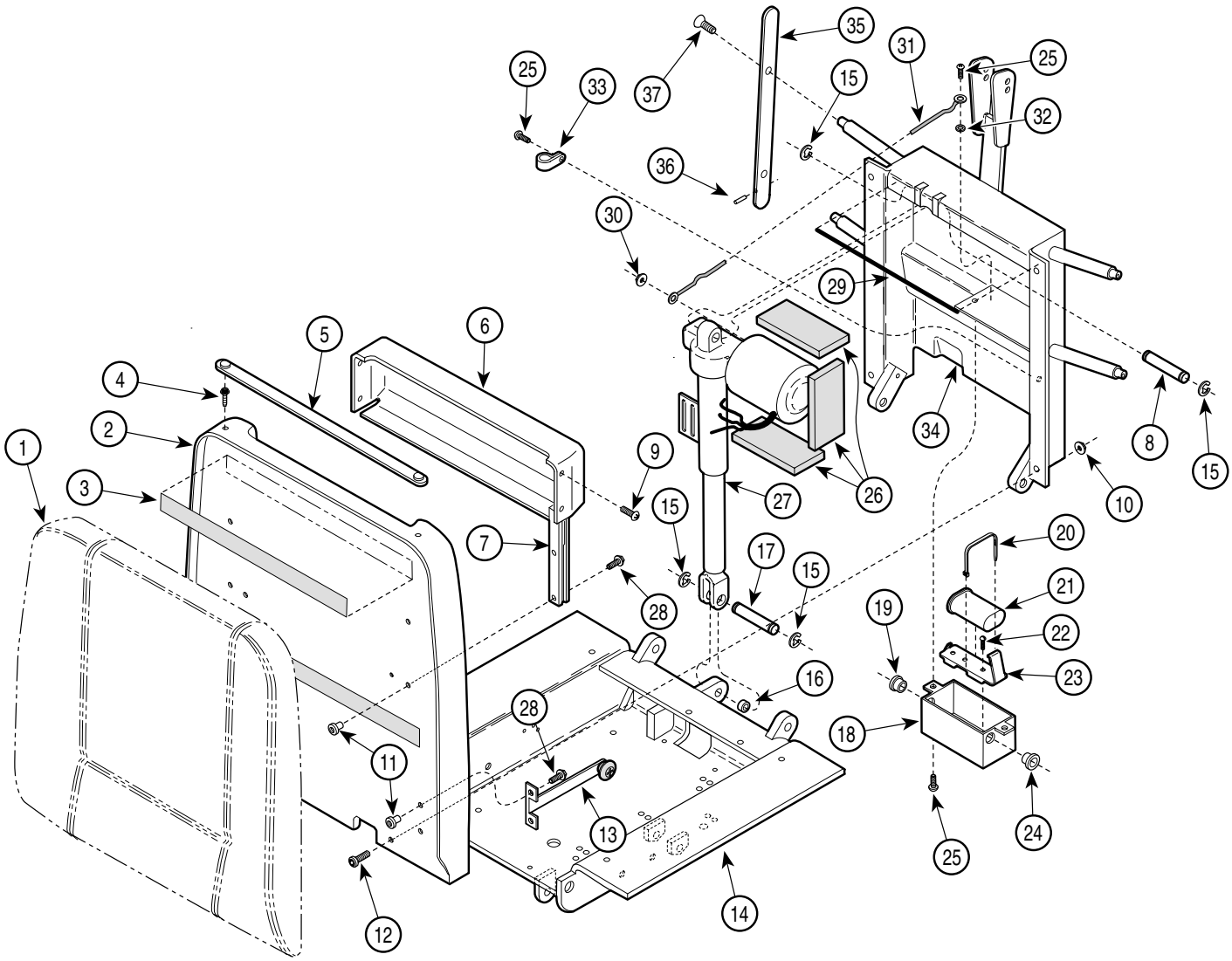
Back Components (230 VAC Units)



MA489706

Used on units with Serial Number HY1015 and HZ1053 thru Present

Item	Part No.	Description	Qty.
1		Upholstered Back and Seat Rest (Refer to "Upholstery Set" Elsewhere)	Ref
2	029-1994-00	Backrest Assembly	1
3	053-0131-04	Velcro Hook Tape	2
	042-0040-00	Staples (Not Shown)	
4	016-0022-00	Stud	2
5	002-0146-00	Paper Tear Strip Assembly	1
6	053-0209-00	Paper Roll Holder	1
7	016-0579-01	L.H. Paper Roll Slide (Shown)	1
	016-0579-00	R.H. Paper Roll Slide (Not Shown)	1
8	042-0048-00	Clevis Pin	1
9	040-0008-78	Screw	4
10	041-0250-17	Nut	4
11	042-0060-01	Joint Connecting Nut	6
12	042-0059-01	Joint Connecting Bolt	4
13	029-2107-00	Hand Control Mounting Bracket Assy.	1
14		Seat Weldment (Refer to "Seat Components" Elsewhere)	Ref
15	042-0007-02	E-Ring	4
16	016-0149-09	Sleeve Bearing	1
17	042-0048-01	Clevis Pin	1
18	050-3298-00	Back Capacitor Cover	1
19	053-0068-07	Snap Bushing	1
20	015-0016-00	Cable Tie	1
21	015-0723-00	Capacitor	1
22	040-0010-62	Screw	2
23	050-3755-00	Capacitor Bracket	1
24	053-0068-01	Snap Bushing	1
25	040-0010-47	Screw	4
26	054-0085-04	Sound Damp	3
27	002-0496-01	Back Actuator Assembly	1
28	040-0250-79	Whizlock Screw	6
29	053-0717-00	Outer Shroul Seal	1
30	041-0010-01	Locknut (Program. Only)	1
31	015-0082-04	Grounding Braid (Program. Only)	1
32	045-0001-31	Lockwasher (Program. Only)	1
33	015-0014-02	Cable Clamp	1
34	030-1219-00	Back Weldment	1
35	051-0771-00	Siderail Bar	2
36	042-0009-12	Roll Pin	2
37	040-0375-45	Screw	4

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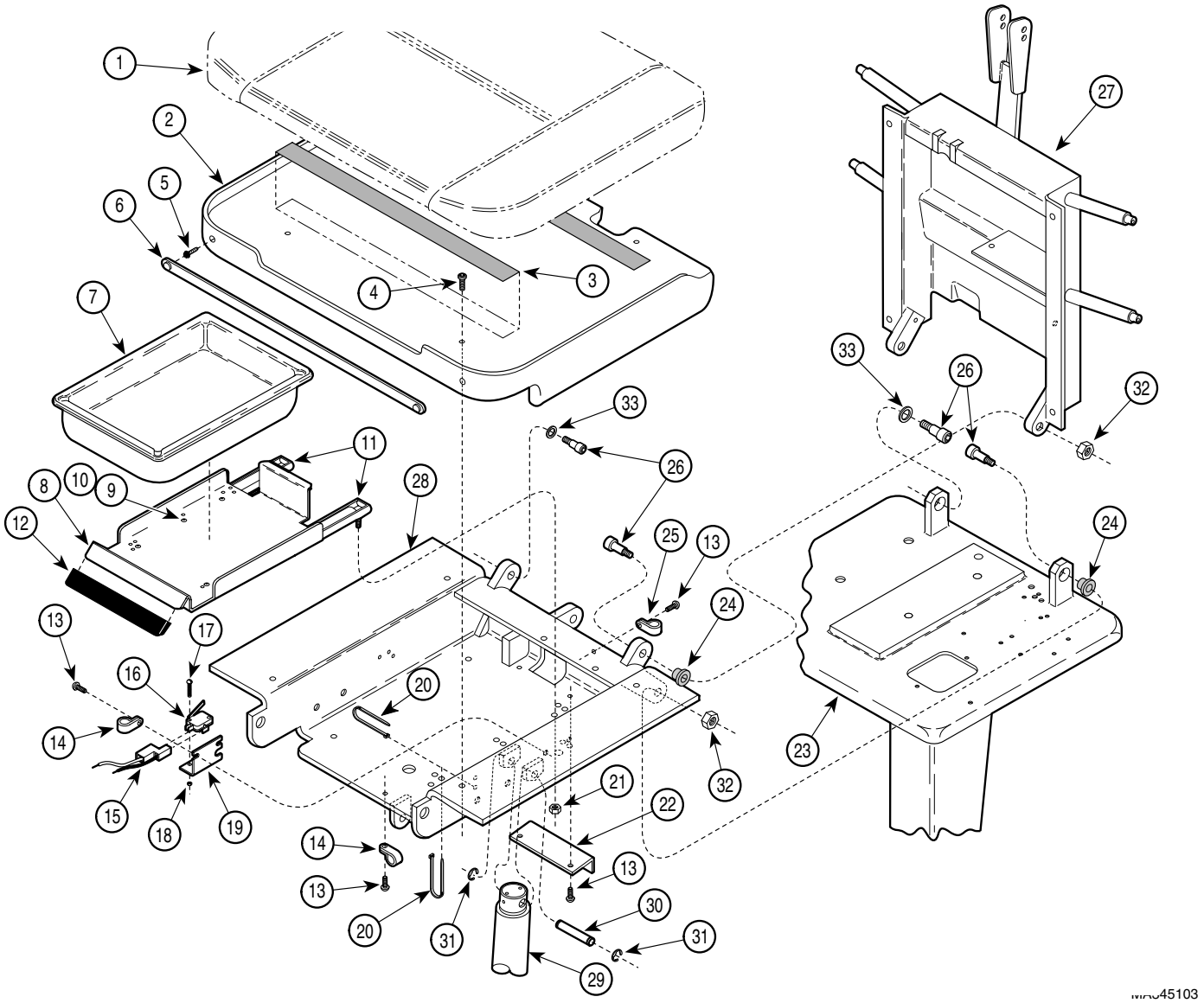
Seat Components



MAC45103

Used on units with Serial Number GT1000, GV1000, JX1000, JY1000, HY1000, HZ1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
1		Upholstered Back and Seat Rest (Refer to “Upholstery Set” Elsewhere)	Ref
2	029-1993-00	Seat Board Assembly	1
3	053-0131-04	Velcro Hook Tape	2
	042-0040-00	Staples (Not Shown)	AR
4	042-0059-01	Joint Connecting Bolt	4
5	016-0022-00	Stud	2
6	002-0146-00	Paper Tear Strip Assembly	1
7	016-0373-00	Treatment Pan	1
8	029-1773-00	Drain Pan Assembly (Includes Items 9 thru 12)	1
9	• 042-0010-24	• Pop Rivet	6
10	• 040-0001-121	• Washer	6
11	• 016-0578-00	• Pan Slide	2
12	• 053-0349-01	Handle (Apply Loctite #042-0076-00)	1
13	040-0010-47	Screw	4
14	015-0014-02	Cable Clamp	2
15		Pan Limit Switch Harness (Refer to “Wiring Diagram” Elsewhere)	Ref
16	015-1024-00	Limit Switch	1
17	040-0004-09	Screw	2
18	041-0004-01	Nut	2
19	050-3124-00	Pan Switch Bracket	1
20	015-0013-02	Cable Tie	4
21	041-0008-02	Nut	4
22	053-0756-01	Tilt Cover	1
23	030-1054-00	Column Adapter Weldment	1
24	016-0131-04	Flanged Bearing	4
25	015-0014-02	Cable Clamp	1
26	042-0014-05	Shoulder Screw (Apply Loctite #042-0025-00)	4
27		Back Weldment (Refer to “Back Components” Elsewhere)	Ref
28	030-1053-00	Seat Weldment	1
29		Tilt Actuator (Refer to “Base Electrical Components” Elsewhere)	Ref
30	042-0048-02	Clevis Pin	1
31	042-0007-02	E-Ring	2
32	041-0500-00	Hex Jam Nut	4
33	053-0858-00	Nylon Washer (Non-Prog. Units Only)	2

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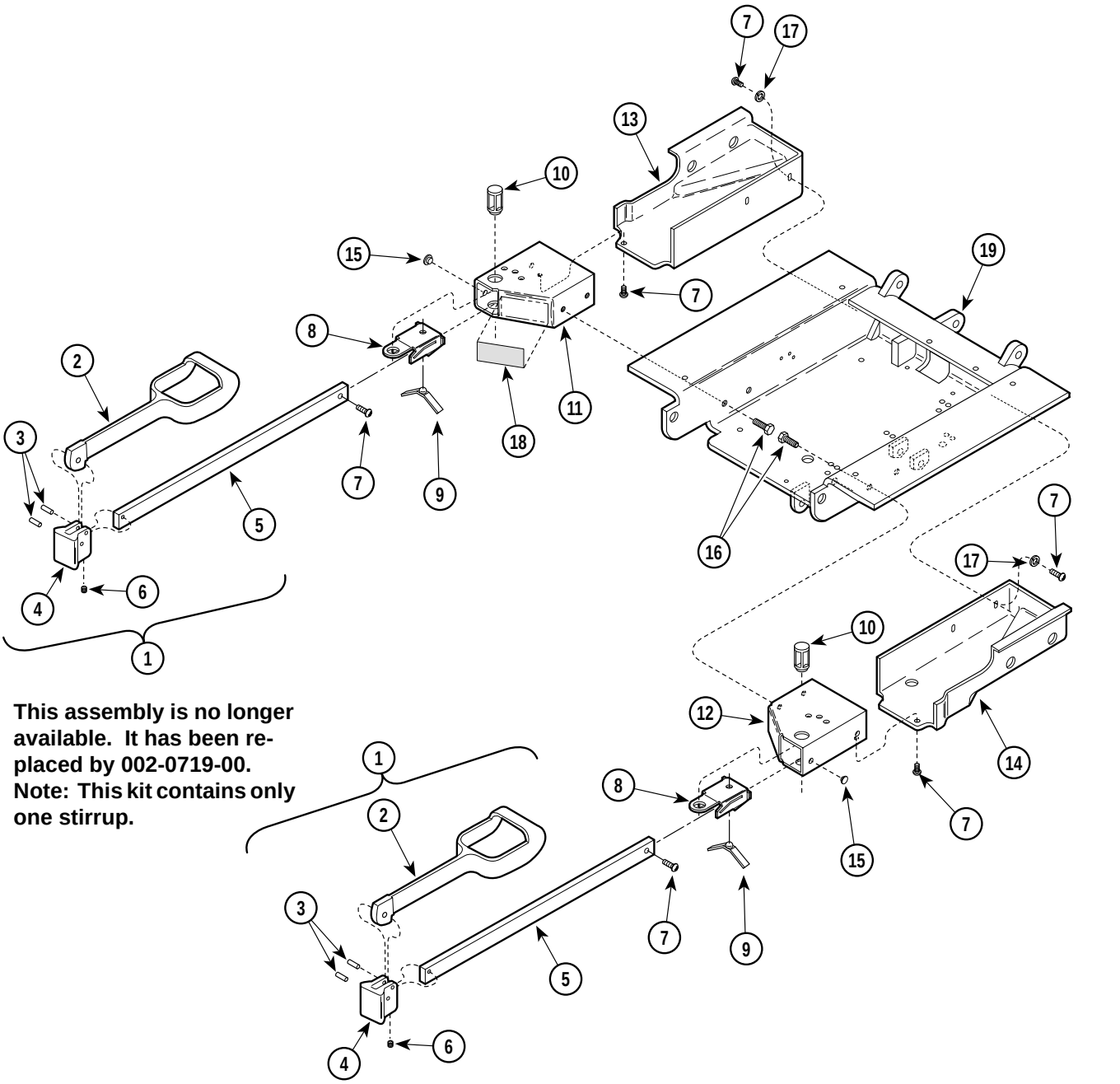
Stirrup Assembly



This assembly is no longer available. It has been replaced by 002-0719-00. Note: This kit contains only one stirrup.

MA345200

Used on units with Serial Number GT1000 and GV1000 thru present and JX1000, JY1000, HY1000, HZ1000 and LS1000 thru JX9392, JY3487, HY1070, HZ1154 and LS1448

Item	Part No.	Description	Qty.
1	029-1397-00	Stirrup Assembly (Includes Items 2 thru 5)	2
2	• 020-0181-00	• Stirrup	1
3	• 042-0001-00	• Roll Pin	2
4	• 020-0096-00	• Pivot Block	1
5	• 051-0668-00	• Horizontal Bar	1
6	• 040-0250-15	• Set Screw	1
7	040-0010-47	Screw	8
8	050-5027-00	Bracket	2
9	016-0400-00	Spring	2
10	053-0387-00	Pivot Boss	2
11	030-0725-00	R.H. Stirrup Mount Weldment	1
12	030-0726-00	L.H. Stirrup Mount Weldment	1
13	053-0843-00	R.H. Stirrup Housing	1
14	053-0843-01	L.H. Stirrup Housing	1
15	053-0050-05	Hole Plug	4
16	040-0375-00	Screw	4
17	045-0001-00	Lockwasher	4
18	061-0296-00	Stirrup Tag	1
19		Seat Weldment (Refer to “Seat Components” Elsewhere)	Ref

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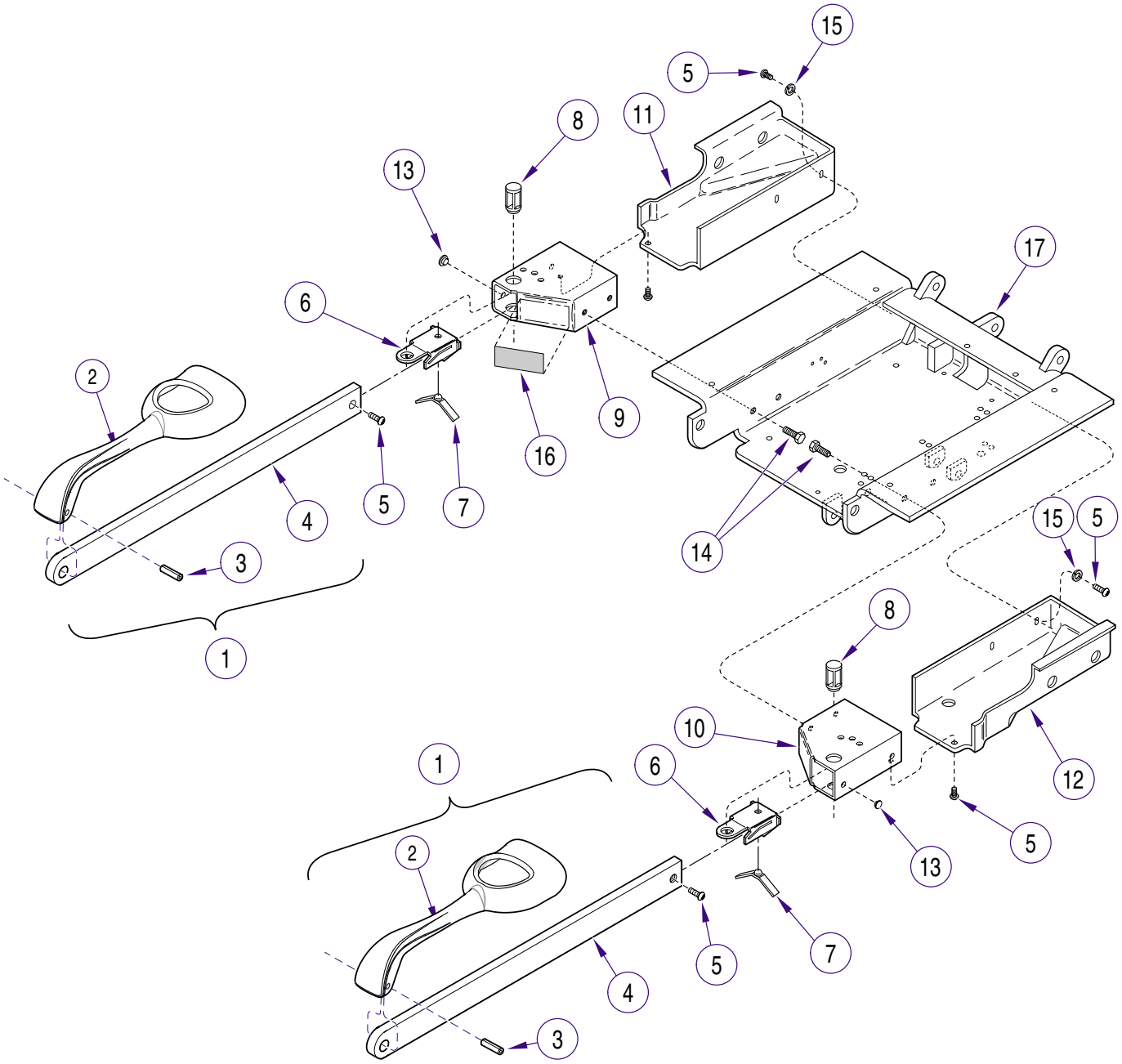
Stirrup Assembly



MA345201i

Used on units with Serial Number JX9393, JY3488, HY1071, HZ1155 and LS1449 thru Present

Item	Part No.	Description	Qty.
1	029-2951-00	Stirrup Assembly (Includes Items 2 thru 4)	2
2	• 020-0239-00	• Stirrup	1
3	• 042-0001-00	• Roll Pin	1
4	• 051-1003-00	• Horizontal Bar	1
5	040-0010-47	Screw	8
6	050-5027-00	Bracket	2
7	016-0400-00	Spring	2
8	053-0387-00	Pivot Boss	2
9	030-0725-00	R.H. Stirrup Mount Weldment	1
10	030-0726-00	L.H. Stirrup Mount Weldment	1
11	053-0843-00	R.H. Stirrup Housing	1
12	053-0843-01	L.H. Stirrup Housing	1
13	053-0050-05	Hole Plug	4
14	040-0375-00	Screw	4
15	045-0001-00	Lockwasher	4
16	061-0296-00	Stirrup Tag	1
17		Seat Weldment (Refer to “Seat Components” Elsewhere)	Ref

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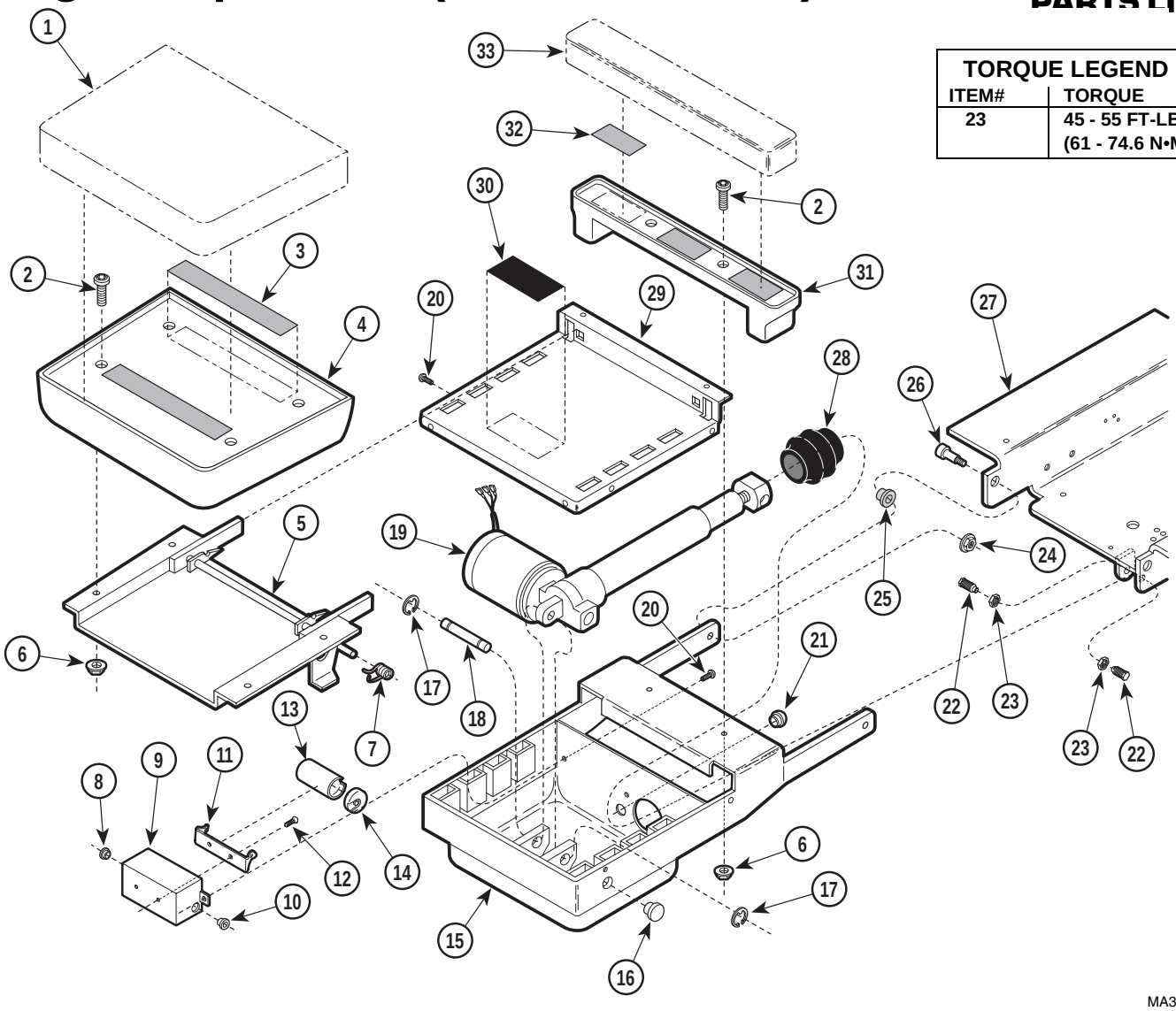
Leg Components (115 VAC Units)

TORQUE LEGEND	
ITEM#	TORQUE
23	45 - 55 FT-LBS (61 - 74.6 N•M)



MA345300

Used on units with Serial Number GT1000 and GV1000 thru Present

Item	Part No.	Description	Qty.
1		Upholstered Foot Rest (Refer to "Upholstery Set" Elsewhere)	Ref
2	042-0059-06	Joint Connecting Bolt	6
3	053-0131-08	Velcro Hook Tape	2
	042-0040-00	Staples (Not Shown)	AR
4	029-1789-00	Foot Board Assembly	1
5	030-0943-10	Footboard Weldment	1
6	041-0250-17	Nut	6
7	025-0045-01	L.H. Torsion Spring (Shown)	1
	025-0045-00	R.H. Torsion Spring (Not Shown)	1
8	053-0789-00	Split Snap Bushing	1
9	050-3233-00	Foot Capacitor Cover	1
10	053-0068-01	Snap Bushing	1
11	015-0412-00	Capacitor Bracket	1
12	040-0010-62	Screw	2
13	015-0437-04	Capacitor	1
14	015-0413-00	Capacitor Cap	1
15	030-0944-00	Foot Extension Weldment	1
16	053-0050-06	Hole Plug	2
17	042-0007-00	E-Ring	2
18	042-0006-03	Clevis Pin	1
19	002-0495-00	Foot Actuator Assembly	1
20	040-0010-47	Screw	6
21	015-0002-03	Strain Relief Bushing	1
22	051-0769-00	Pivot Screw	2
23	041-0625-01	Jam Nut	2
24	041-0375-05	Jam Nut	2
25	016-0131-13	Flanged Bearing	2
26	042-0014-00	Shoulder Screw(Apply Loctite 042-0025-00)	2
27		Seat Weldment (Refer to "Seat Components" Elsewhere)	Ref
28	053-0749-00	Foot Actuator Bellow	1
29	050-3255-00	Front Trim	1
30	053-0018-00	Nyl-o-tape	1
31	029-1790-00	Leg Board Assembly	1
32	053-0131-11	Velcro Hook Tape	3
	042-0040-00	Staples (Not Shown)	AR
33		Upholstered Leg Rest (Refer to "Upholstery Set" Elsewhere)	Ref
34	053-0858-01	Nylon Washer (Non-Programmable Units Only)	1

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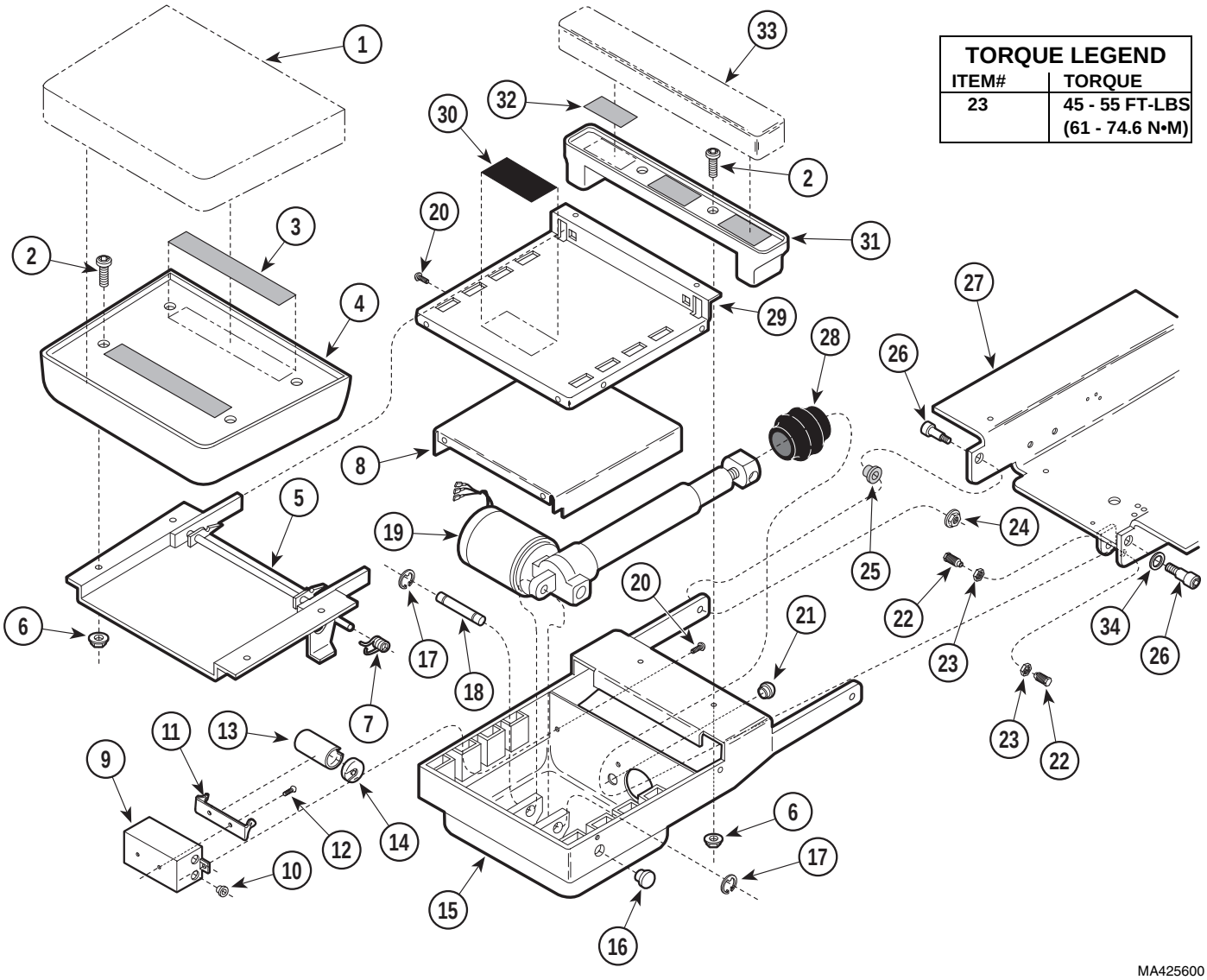
Leg Components (115 VAC Units)

TORQUE LEGEND	
ITEM#	TORQUE
23	45 - 55 FT-LBS (61 - 74.6 N•M)



MA425600

Used on units with Serial Number JX1000, JY1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
1		Upholstered Foot Rest (Refer to "Upholstery Set" Elsewhere)	Ref
2	042-0059-06	Joint Connecting Bolt	6
3	053-0131-32	Velcro Hook Tape	2
	042-0040-00	Staples (Not Shown)	AR
4	029-1789-00	Foot Board Assembly	1
5	030-0943-10	Footboard Weldment	1
6	041-0250-17	Nut	6
7	025-0045-01	L.H. Torsion Spring (Shown)	1
	025-0045-00	R.H. Torsion Spring (Not Shown)	1
8	050-3975-00	Foot Section Internal Shield	1
9	050-3965-00	Foot Capacitor Cover	1
10	053-0789-00	Split Snap Bushing	2
11	015-0412-00	Capacitor Bracket	1
12	040-0010-62	Screw	2
13	015-0437-04	Capacitor	1
14	015-0413-00	Capacitor Cap	1
15	030-0944-00	Foot Extension Weldment	1
16	053-0050-06	Hole Plug	2
17	042-0007-00	E-Ring	2
18	042-0006-03	Clevis Pin	1
19	002-0495-00	Foot Actuator Assembly	1
20	040-0010-47	Screw	6
21	015-0002-03	Strain Relief Bushing	1
22	051-0769-00	Pivot Screw	2
23	041-0625-01	Jam Nut	2
24	041-0375-05	Jam Nut	2
25	016-0131-13	Flanged Bearing	2
26	042-0014-00	Shoulder Screw(Apply Loctite 042-0025-00)	2
27		Seat Weldment (Refer to "Seat Components" Elsewhere)	Ref
28	053-0749-00	Foot Actuator Bellow	1
29	050-3255-00	Front Trim	1
30	053-0018-00	Nyl-o-tape	1
31	029-1790-00	Leg Board Assembly	1
32	053-0131-11	Velcro Hook Tape	3
	042-0040-00	Staples (Not Shown)	AR
33		Upholstered Leg Rest (Refer to "Upholstery Set" Elsewhere)	Ref
34	053-0858-01	Nylon Washer	1

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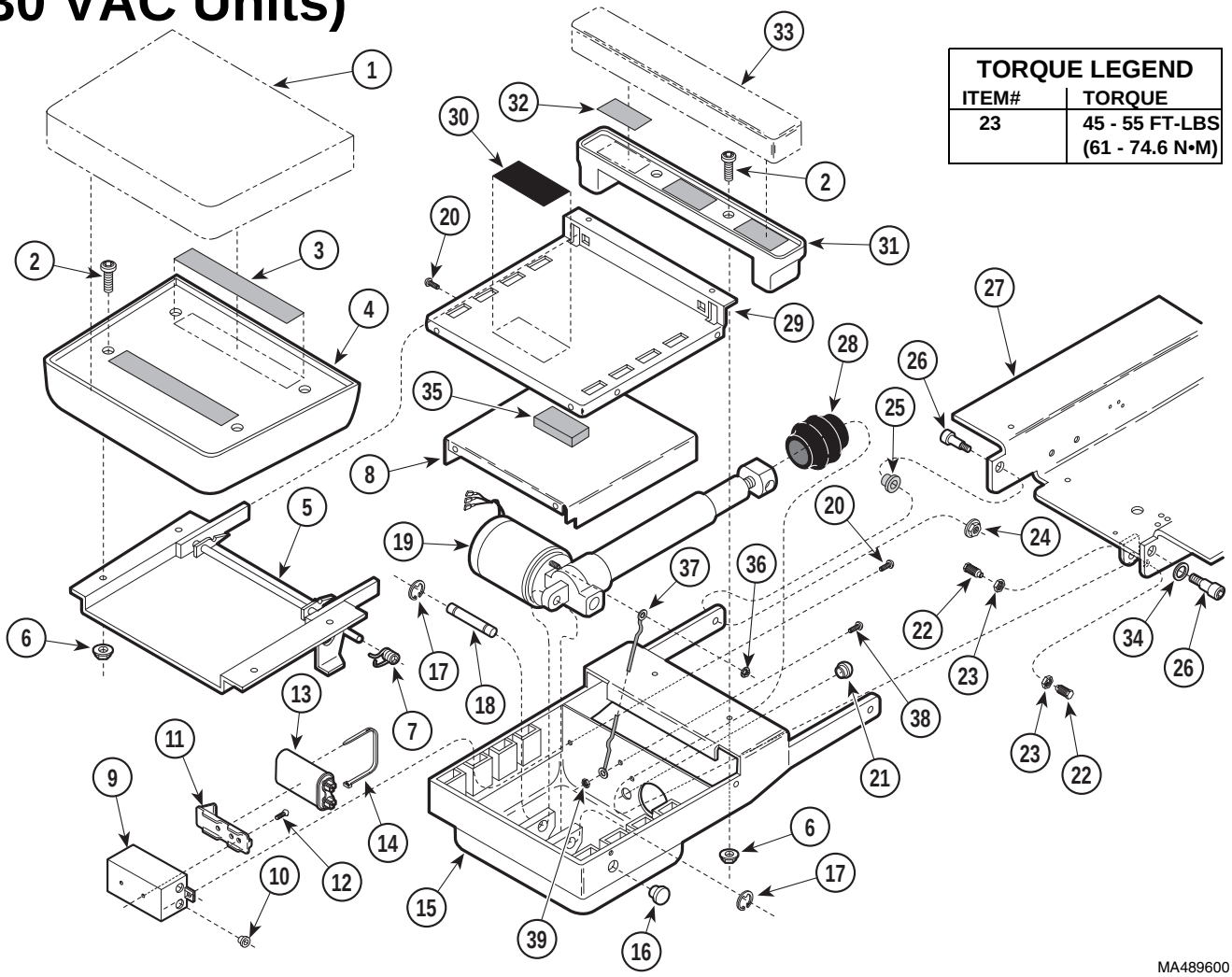
Leg Components (230 VAC Units)

TORQUE LEGEND	
ITEM#	TORQUE
23	45 - 55 FT-LBS (61 - 74.6 N•M)



MA489600

Used on units with Serial Number HY1000 and HZ1000 thru Present

Item	Part No.	Description	Qty.
1		Upholstered Foot Rest (Refer to "Upholstery Set" Elsewhere)	Ref
2	042-0059-06	Joint Connecting Bolt	6
3	053-0131-32	Velcro Hook Tape	2
	042-0040-00	Staples (Not Shown)	AR
4	029-1789-00	Foot Board Assembly	1
5	030-0943-10	Footboard Weldment	1
6	041-0250-17	Nut	6
7	025-0045-01	L.H. Torsion Spring (Shown)	1
	025-0045-00	R.H. Torsion Spring (Not Shown)	1
8	050-3975-00	Foot Section Internal Shield	1
9	050-3965-00	Foot Capacitor Cover	1
10	053-0789-00	Split Snap Bushing	2
11	050-4453-00	Capacitor Bracket	1
12	040-0010-62	Screw	2
13	015-0723-00	Capacitor	1
14	015-0016-00	Cable Tie	1
15	030-0944-00	Foot Extension Weldment	1
16	053-0050-06	Hole Plug	2
17	042-0007-00	E-Ring	2
18	042-0006-03	Clevis Pin	1
19	002-0495-01	Foot Actuator Assembly	1
20	040-0010-47	Screw	6

Item	Part No.	Description	Qty.
21	015-0002-03	Strain Relief Bushing	1
22	051-0769-00	Pivot Screw	2
23	041-0625-01	Jam Nut	2
24	041-0375-05	Jam Nut	2
25	016-0131-13	Flanged Bearing	2
26	042-0014-00	Shoulder Screw(Apply Loctite 042-0025-00)	2
27		Seat Weldment (Refer to "Seat Components" Elsewhere)	Ref
28	053-0749-00	Foot Actuator Bellow	1
29	050-3255-00	Front Trim	1
30	053-0018-00	Nyl-o-tape	1
31	029-1790-00	Leg Board Assembly	1
32	053-0131-11	Velcro Hook Tape	3
	042-0040-00	Staples (Not Shown)	AR
33		Upholstered Leg Rest (Refer to "Upholstery Set" Elsewhere)	Ref
34	053-0858-01	Nylon Washer	1
35	054-0253-00	Foam Spacer	1
36	041-0010-01	Locknut (Program. Only)	1
37	041-0010-01	Grounding Strap (Program. Only)	1
38	040-0010-129	Screw (Program. Only)	1
39	041-0010-02	Nut (Program. Only)	1

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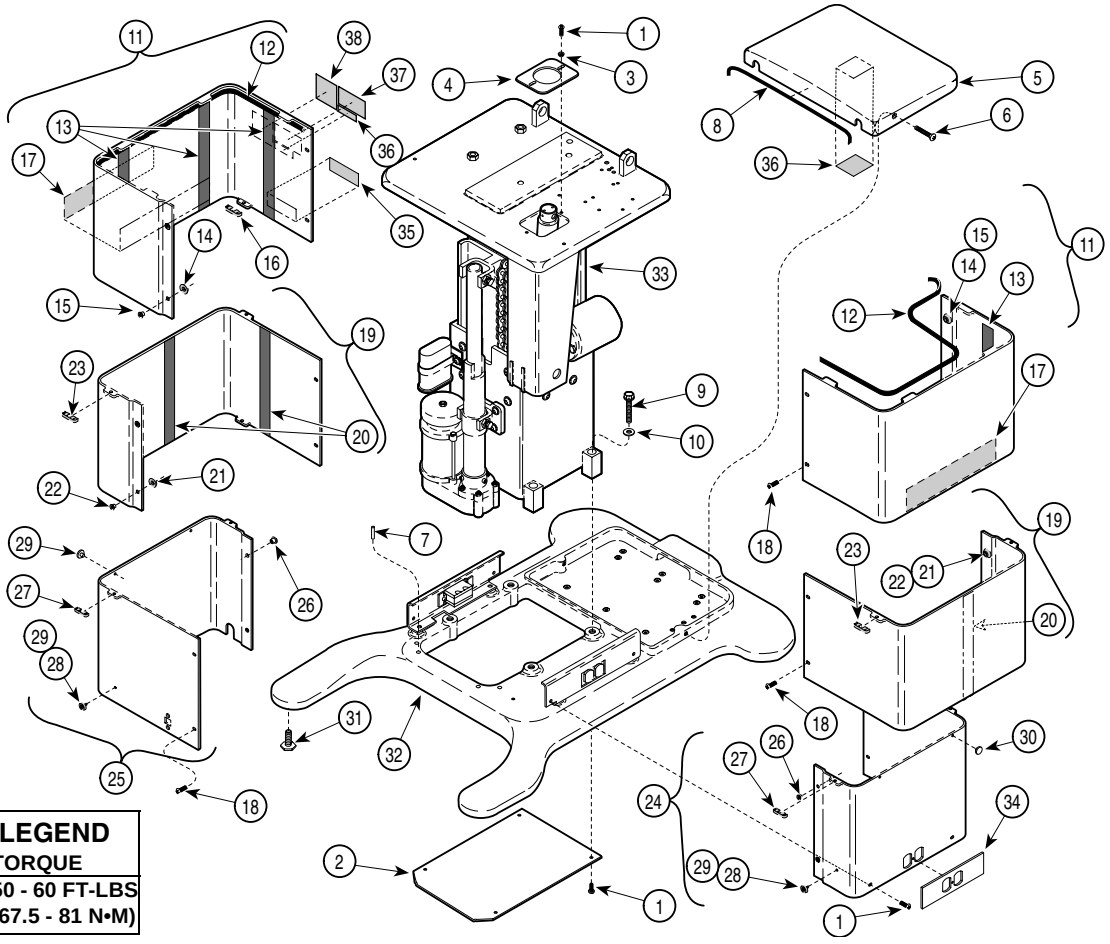
Base Cover Components (115 VAC Units)



TORQUE LEGEND	
ITEM#	TORQUE
9	50 - 60 FT-LBS (67.5 - 81 N•M)

MA345503

Used on units with Serial Number GT1000, GV1000, JX1000, JY1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
1	040-0010-47	Screw	10
2	050-3981-10	Bottom Cover	1
3	053-0757-00	Guide	2
4	050-3291-00	Cover Plate	1
5	050-3676-00	P.C. Board Cover	1
6	040-0010-129	Screw	2
7	042-0001-05	Roll Pin	2
8	053-0717-00	Outer Shroud Seal (Qty. = Feet)	2
9	040-0500-23	Screw	4
10	045-0001-95	Washer	4
11	029-2040-02	Outer Shroud Assembly (Includes Items 12 thru 16 [Qtys. for {1} Shroud])	2
12	• 053-0717-00	• Outer Shroud Seal (Qty. = Total Feet)	5
13	• 053-0105-40	• Velcro Loop	3
14	• 053-0755-00	• Nutsert Glide	2
15	• 042-0045-02	• Nutsert	2
16	• 053-0752-00	• Snap-on Glide	2
17	061-0634-00	Label (Programmable 75L)	2
	061-0636-00	Label (75L) {[Non-Programmable]}	2
	053-0297-11	Label (411)	2
	061-0521-00	Registered Label (Not Shown)	2
18	040-0008-78	Screw	12
19	029-1848-00	Middle Shoud Assembly (Includes Items 20 thru 23 [Qtys. for {1} Shroud])	2
20	• 053-0105-40	• Velcro Loop	2
21	• 053-0755-00	• Nutsert Glide	2
22	• 042-0045-02	• Nutsert	2
23	• 053-0752-00	• Snap-on Glide	2
24	029-1847-01	L.H. Inner Shroud Assembly (Includes Items 26 thru 30 [Qtys. for {1} Shroud])	1
25	029-1847-00	R.H. Inner Shroud Assembly (Includes Items 26 thru 30 [Qtys. for {1} Shroud])	1
26	• 042-0045-02	• Nutsert	2
27	• 053-0752-00	• Snap-on Glide	2
28	• 053-0796-00	• Bumper	2
29	• 040-0006-06	• Screw (Not Shown)	2
30	• 053-0001-00	• Nylon Stem Bumper	2
31	016-0001-01	Leveling Screw	4
32	020-0170-00	Machined Base	1
33		Column (Refer to “Column Assembly” Elsewhere)	Ref
34	061-0637-00	Receptacle Plate Label	2
35	561-0262-01	Caution Label	1
36	061-0497-00	Fuse Label (Non-Programmable Units)	1
	061-0641-00	Fuse Label (Programmable Units)	1
37	061-0291-00	Patent Number Label	1
38		Serial Number Label	1
39	061-0620-00	U.L./C.U.L. Label	1

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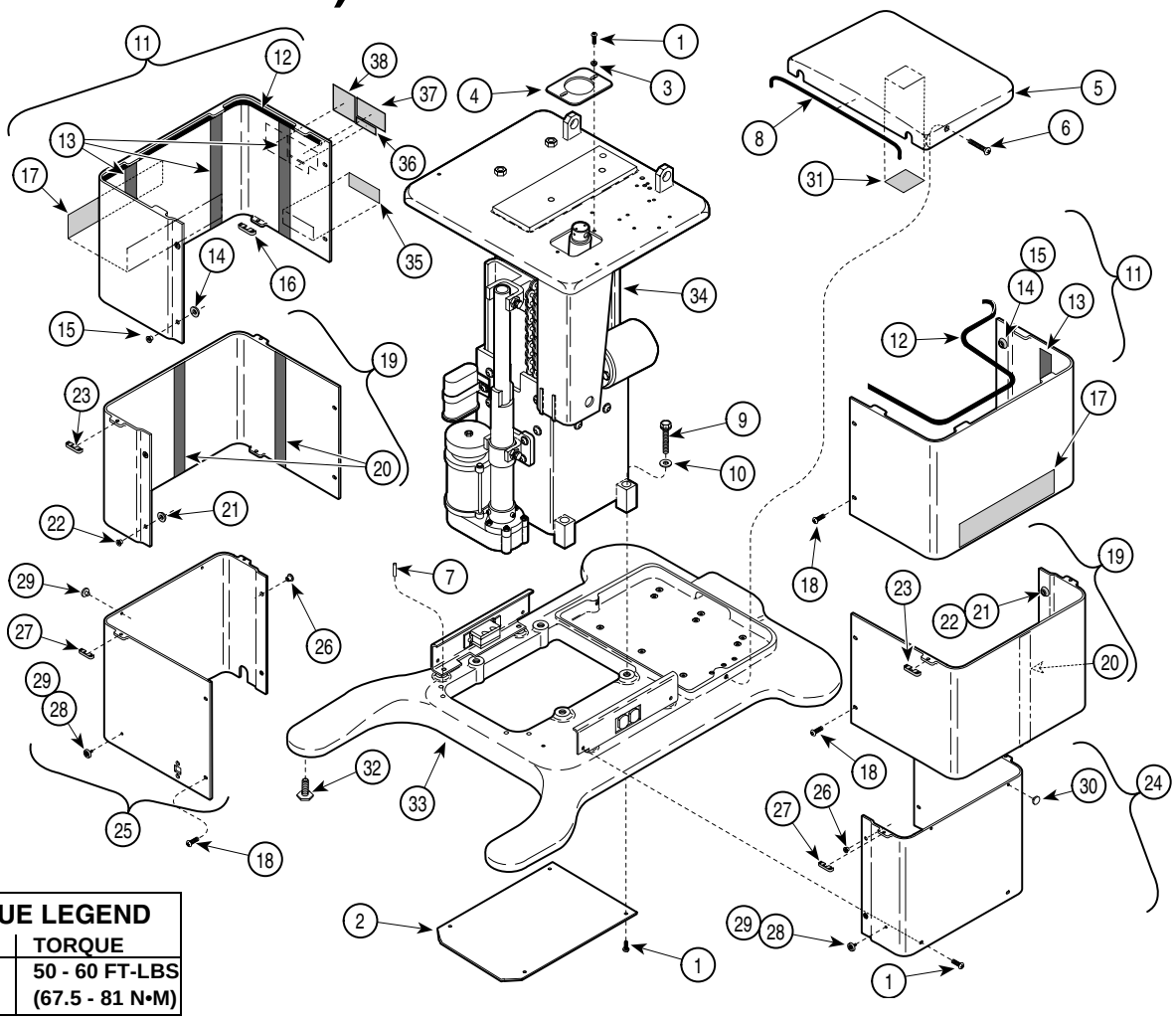
Base Cover Components (230 VAC Units)



TORQUE LEGEND	
ITEM#	TORQUE
9	50 - 60 FT-LBS (67.5 - 81 N•M)

MA426000

Used on units with Serial Number HY1000 and HZ1000 thru Present

Item	Part No.	Description	Qty.
1	040-0010-47	Screw	10
2	050-3981-10	Bottom Cover	1
3	053-0757-00	Guide	2
4	053-0916-00	Cover Plate	1
5	050-3676-00	P.C. Board Cover	1
6	040-0010-129	Screw	2
7	042-0001-05	Roll Pin	2
8	053-0717-00	Outer Shroud Seal (Qty. = Feet)	2
9	040-0500-23	Screw	4
10	045-0001-95	Washer	4
11	029-2040-02	Outer Shroud Assembly (Includes Items 12 thru 16 [Qtys. for {1} Shroud])	2
12	• 053-0717-00	• Outer Shroud Seal (Qty. = Total Feet)	5
13	• 053-0105-40	• Velcro Loop	3
14	• 053-0755-00	• Nutsert Glide	2
15	• 042-0045-02	• Nutsert	2
16	• 053-0752-00	• Snap-on Glide	2
17	053-0297-11	Nameplate - 411	2
	061-0521-00	Registered Label (Not Shown)	2
18	040-0008-78	Screw	12
19	029-1848-00	Middle Shoud Assembly (Includes Items 20 thru 23 [Qtys. for {1} Shroud])	2
20	• 053-0105-40	• Velcro Loop	2
21	• 053-0755-00	• Nutsert Glide	2
22	• 042-0045-02	• Nutsert	2
23	• 053-0752-00	• Snap-on Glide	2
24	029-1847-03	L.H. Inner Shroud Assembly (Includes Items 26 thru 30 [Qtys. for {1} Shroud])	1
25	029-1847-02	R.H. Inner Shroud Assembly (Includes Items 26 thru 30 [Qtys. for {1} Shroud])	1
26	• 042-0045-02	• Nutsert	2
27	• 053-0752-00	• Snap-on Glide	2
28	• 053-0796-00	• Bumper	2
29	• 040-0006-06	• Screw (Not Shown)	2
30	• 053-0001-00	• Nylon Stem Bumper	2
31	061-0497-00	Fuse Label (Non-Programmable Units)	1
	061-0641-00	Fuse Label (Programmable Units)	1
32	016-0001-01	Leveling Screw	4
33	020-0170-00	Machined Base	1
34		Column (Refer to “Column Assembly” Elsewhere)	Ref
35	561-0262-01	Caution Label	1
36	061-0291-00	Patent Number Label	1
37		Serial Number Label	1
38	061-0620-00	U.L./C.U.L. Label	1

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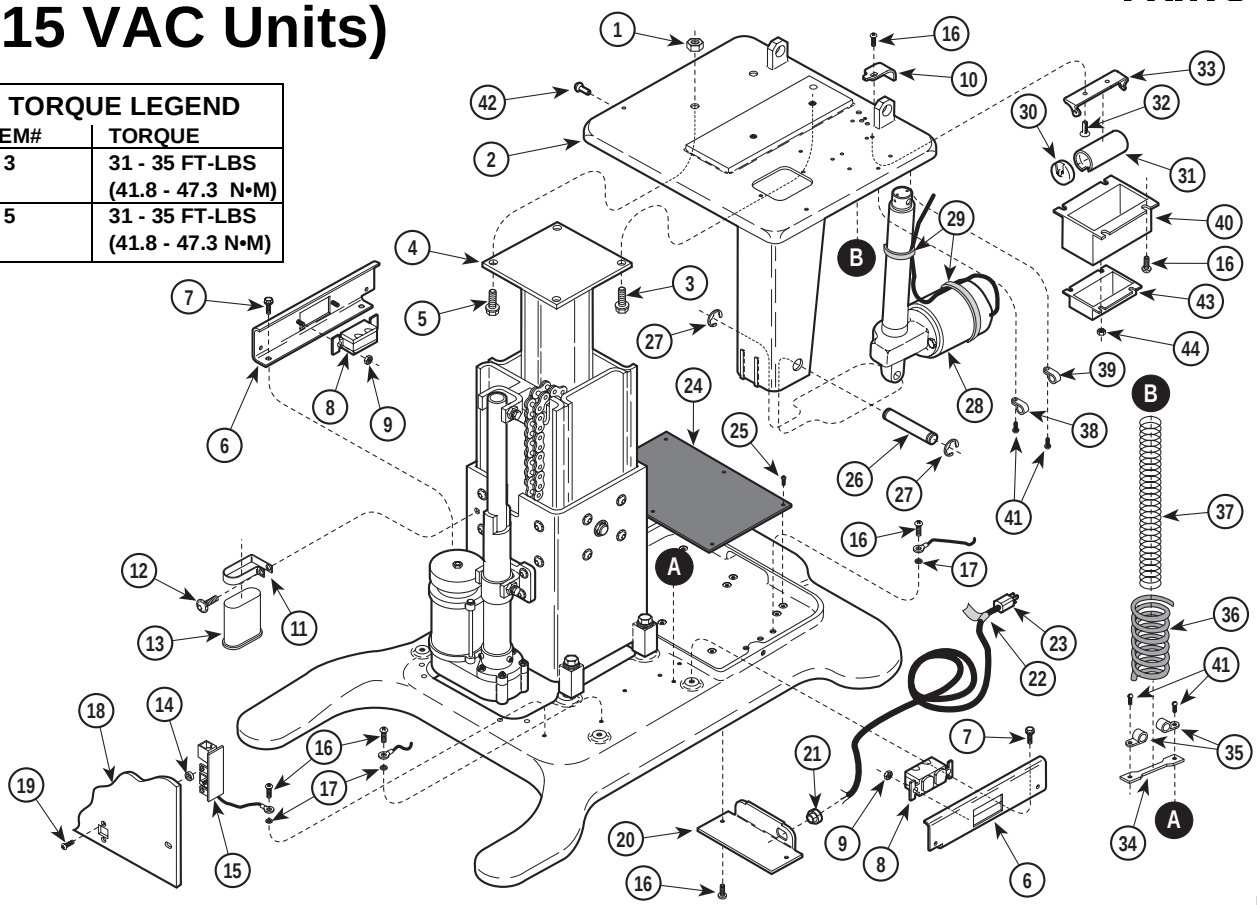
Base Electrical Components (115 VAC Units)

TORQUE LEGEND	
ITEM#	TORQUE
3	31 - 35 FT-LBS (41.8 - 47.3 N•M)
5	31 - 35 FT-LBS (41.8 - 47.3 N•M)



MA345600

Used on units with Serial Number GT1000 and GV1000 thru Present

Item	Part No.	Description	Qty.
1	041-0375-10	Nut	2
2		Column Adapter Weldment (Refer to "Seat Components" Elsewhere)	Ref
3	040-0375-38	Screw (Apply Loctite #042-0025-00)	2
4		Column (Refer to "Column Components" Elsewhere)	Ref
5	040-0375-38	Screw	4
6	030-0936-10	Receptacle Mounting Weldment	1
7	040-0250-88	Screw	4
8	015-0083-02	Duplex Receptacle	2
9	041-0008-02	Nut	4
10	050-3728-00	Slot Cover (Non-Programmable)	1
11	050-3323-00	Capacitor Strap	1
12	042-0151-00	Screw	1
13	015-0723-03	Motor Run Capacitor	1
14	016-0138-09	Spacer	4
15	015-0836-00	Control Inlet P.C. Board	2
16	040-0010-47	Screw	27
17	045-0001-31	Lockwasher	8
18		Inner Shroud Assembly (Refer to "Base Cover Components" Elsewhere)	1
19	040-0008-79	Screw	4
20	050-3670-00	Power Inlet Bracket	1
21	015-0002-05	Strain Relief Bushing	1
22	061-0295-00	Cord Tag	1
23	015-0066-04	Cord Assembly	1
24	015-1065-00	P.C. Board Assembly (Programmable)	1
	015-1132-00	P.C. Board Assembly (Non-Program.)	1
	• 015-0346-24	• Fuse - .150 A (Programmable)	2
	• 015-0346-21	• Fuse - 1/4 A (Non-Program.)	1
	• 015-0346-22	• Fuse - 5 A (All Units)	4
25	040-0008-94	Screw	6
26	042-0048-11	Clevis Pin	1
27	042-0007-02	E-Ring	2
28	002-0498-00	Tilt Actuator	1
29	015-0013-01	Cable Tie (14.5" Long)	2
30	015-0413-00	Capacitor Cap	1
31	015-0437-02	Capacitor	1
32	040-0010-62	Screw	2
33	015-0412-00	Capacitor Bracket	1
34	050-3394-00	Spring Bracket	2
35	015-0001-01	Wire Clip	4
36		Main Harness (Refer to "Wiring Diagram" Elsewhere)	Ref
37	525-0055-03	Extension Spring	1
38	015-0014-02	Cable Clamp (3/16")	6
39	015-0014-04	Cable Clamp (1/4")	2
40	050-3730-00	Connection Cover (Program. Only)	1
	050-3332-00	Connection Cover (Non-Program. Only)	1
41	040-0010-129	Screw	4
42	042-0153-00	Drive Rivet	6
43	050-3863-00	Sensor Wire Cover (Program. Only)	1
44	041-0008-02	Nylock Nut (Program. Only)	2
45	015-0013-02	Cable Tie (3.87" {Not Shown})	7
46	015-0016-00	Cable Tie (11.5" {Not Shown})	1
47	015-0017-00	Cable Tie W/ Mtg. Hole (Not Shown)	2
48	015-0010-04	4" Spiral Wrap (Not Shown)	2

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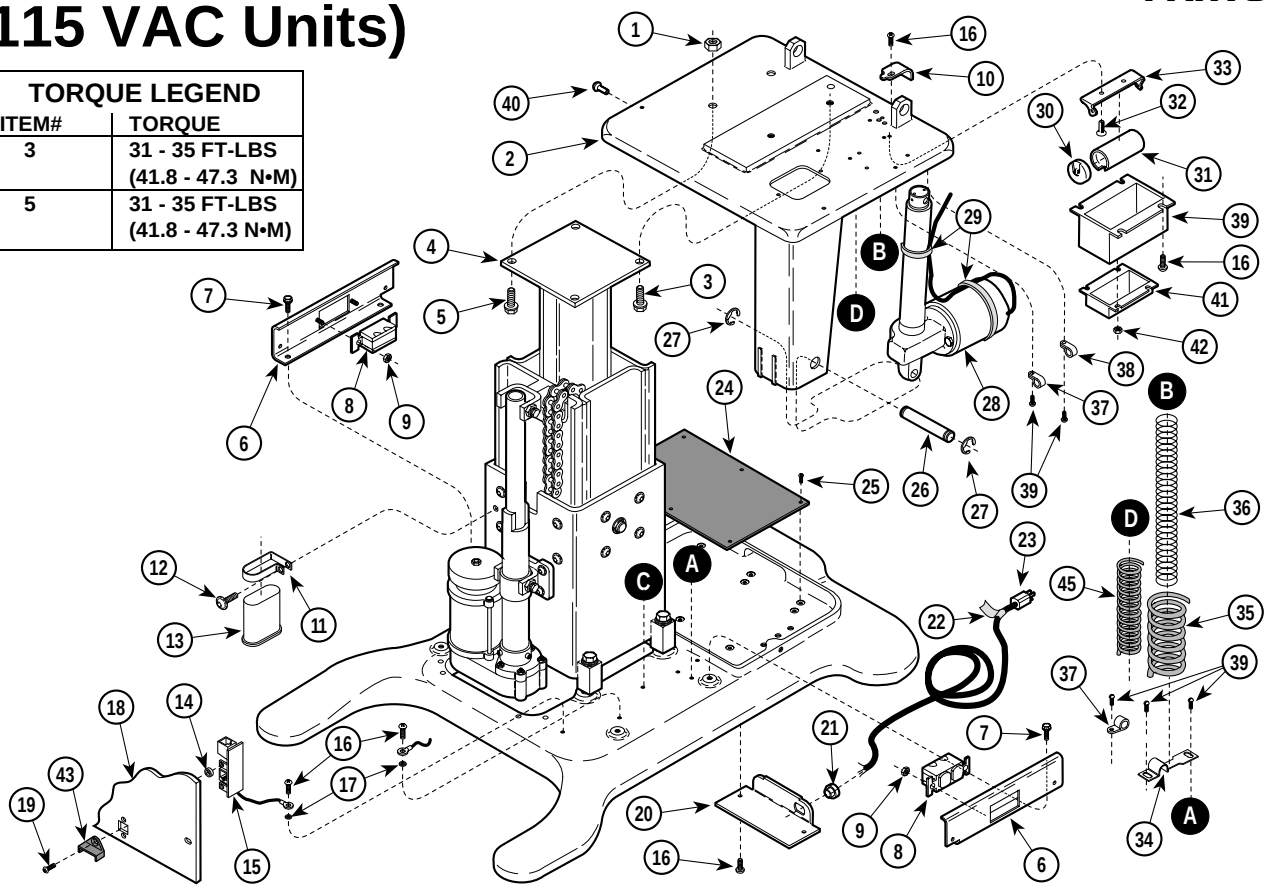
Base Electrical Components (115 VAC Units)

TORQUE LEGEND	
ITEM#	TORQUE
3	31 - 35 FT-LBS (41.8 - 47.3 N•M)
5	31 - 35 FT-LBS (41.8 - 47.3 N•M)



MA345602

Used on units with Serial Number JX1000 thru Present, JY1000 thru JY2595, and LS1000 thru LS1176

Item	Part No.	Description	Qty.
1	041-0375-10	Nut	2
2		Column Adapter Weldment (Refer to "Seat Components" Elsewhere)	Ref
3	040-0375-38	Screw (Apply Loctite #042-0025-00)	2
4		Column (Refer to "Column Components" Elsewhere)	Ref
5	040-0375-38	Screw	4
6	030-0936-10	Receptacle Mounting Weldment	1
7	040-0250-88	Screw	4
8	015-0083-02	Duplex Receptacle	2
9	041-0008-02	Nut	4
10	050-3728-00	Slot Cover (Non-Programmable)	1
11	050-3323-00	Capacitor Strap	1
12	042-0151-00	Screw	1
13	015-0723-03	Motor Run Capacitor	1
14	016-0138-09	Spacer	4
15	015-1173-00	Control Inlet P.C. Board	2
16	040-0010-47	Screw	29
17	045-0001-31	Lockwasher	10
18		Inner Shroud Assembly (Refer to "Base Cover Components" Elsewhere)	1
19	040-0008-79	Screw	4
20	050-3670-00	Power Inlet Bracket	1
21	015-0002-05	Strain Relief Bushing	1
22	061-0295-00	Cord Tag	1
23	015-0066-04	Cord Assembly	1
24	015-1225-00	P.C. Board Assembly (Programmable)	1
	015-1166-00	P.C. Board Assembly (Non-Program.)	1
	• 015-0346-24	• Fuse - .150 A (Programmable)	2
	• 015-0346-21	• Fuse - 1/4 A (Non-Program.)	2
	• 015-0346-22	• Fuse - 5 A (All Units)	4
25	040-0008-94	Screw	6
26	042-0048-11	Clevis Pin	1
27	042-0007-02	E-Ring	2
28	002-0498-00	Tilt Actuator	1
29	015-0013-01	Cable Tie (14.5" Long)	2
30	015-0413-00	Capacitor Cap	1
31	015-0437-02	Capacitor	1
32	040-0010-62	Screw	2
33	015-0412-00	Capacitor Bracket	1
34	050-3394-00	Spring Bracket (Early Units Only)	2
35		Harness (Refer to "Wiring Diagram")	Ref
36	525-0055-03	Extension Spring	1
37	015-0014-02	Cable Clamp (3/16")	8
38	050-3871-00	Connection Cover (Program. Only)	1
	050-3332-00	Connection Cover (Non-Program. Only)	1
39	040-0010-47	Screw	3
40	042-0153-00	Drive Rivet	6
41	050-3863-00	Sensor Wire Cover (Program. Only)	1
42	041-0008-02	Nylock Nut (Program. Only)	2
43	016-0750-00	Inlet Board Cover	2
44		Harness (Refer to "Wiring Diagram")	Ref
45	015-0013-02	Cable Tie (3.87" {Not Shown})	7
46	015-0017-00	Cable Tie W/ Mtg. Hole (Not Shown)	2
47	015-0010-04	4" Spiral Wrap (Not Shown)	2

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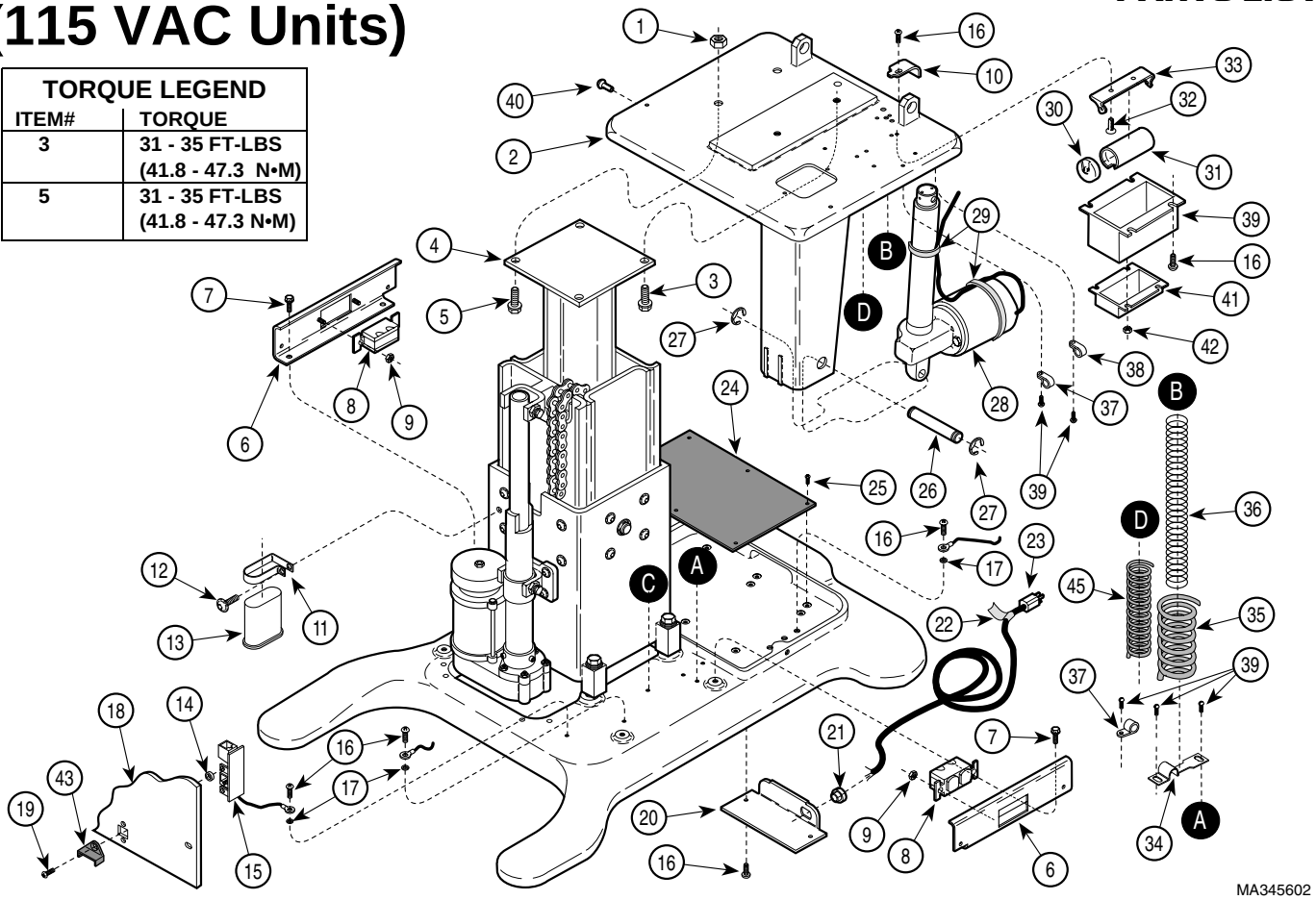
Base Electrical Components (115 VAC Units)

TORQUE LEGEND	
ITEM#	TORQUE
3	31 - 35 FT-LBS (41.8 - 47.3 N•M)
5	31 - 35 FT-LBS (41.8 - 47.3 N•M)



Used on units with Serial Number JY2596 thru JY2930 and LS1177 thru LS1302

Item	Part No.	Description	Qty.
1	041-0375-10	Nut	2
2		Column Adapter Weldment (Refer to "Seat Components" Elsewhere)	Ref
3	040-0375-38	Screw (Apply Loctite #042-0025-00)	2
4		Column (Refer to "Column Components" Elsewhere)	Ref
5	040-0375-38	Screw	4
6	030-0936-10	Receptacle Mounting Weldment	1
7	040-0250-88	Screw	4
8	015-0083-02	Duplex Receptacle	2
9	041-0008-02	Nut	4
10	050-3728-00	Slot Cover (Non-Programmable)	1
11	050-3323-00	Capacitor Strap	1
12	042-0151-00	Screw	1
13	015-0723-03	Motor Run Capacitor	1
14	016-0138-09	Spacer	4
15	015-1173-00	Control Inlet P.C. Board	2
16	040-0010-47	Screw	30
17	045-0001-31	Lockwasher	11
18		Inner Shroud Assembly (Refer to "Base Cover Components" Elsewhere)	1
19	040-0008-79	Screw	4
20	050-3670-00	Power Inlet Bracket	1
21	015-0002-05	Strain Relief Bushing	1
22	061-0295-00	Cord Tag	1
23	015-0066-04	Cord Assembly	1
24	015-1065-02	P.C. Board Assembly (Programmable)	1
	015-1166-00	P.C. Board Assembly (Non-Program.)	1
	• 015-0346-24	• Fuse - .150 A (Programmable)	2
	• 015-0346-21	• Fuse - 1/4 A (Non-Program.)	2
	• 015-0346-22	• Fuse - 5 A (All Units)	4
25	040-0008-94	Screw	6
26	042-0048-11	Clevis Pin	1
27	042-0007-02	E-Ring	2
28	002-0498-00	Tilt Actuator	1
29	015-0013-01	Cable Tie (14.5" Long)	2
30	015-0413-00	Capacitor Cap	1
31	015-0437-02	Capacitor	1
32	040-0010-62	Screw	2
33	015-0412-00	Capacitor Bracket	1
34	050-3394-00	Spring Bracket (Early Units Only)	2
35		Harness (Refer to "Wiring Diagram")	Ref
36	525-0055-03	Extension Spring	1
37	015-0014-02	Cable Clamp (3/16")	8
38	050-3871-00	Connection Cover (Program. Only)	1
	050-3332-00	Connection Cover (Non-Program. Only)	1
39	040-0010-47	Screw	3
40	042-0153-00	Drive Rivet	6
41	050-3863-00	Sensor Wire Cover (Program. Only)	1
42	041-0008-02	Nylock Nut (Program. Only)	2
43	016-0750-00	Inlet Board Cover	2
44		Harness (Refer to "Wiring Diagram")	Ref
45	015-0013-02	Cable Tie (3.87" {Not Shown})	7
46	015-0017-00	Cable Tie W/ Mtg. Hole (Not Shown)	2
47	015-0010-04	4" Spiral Wrap (Not Shown)	2

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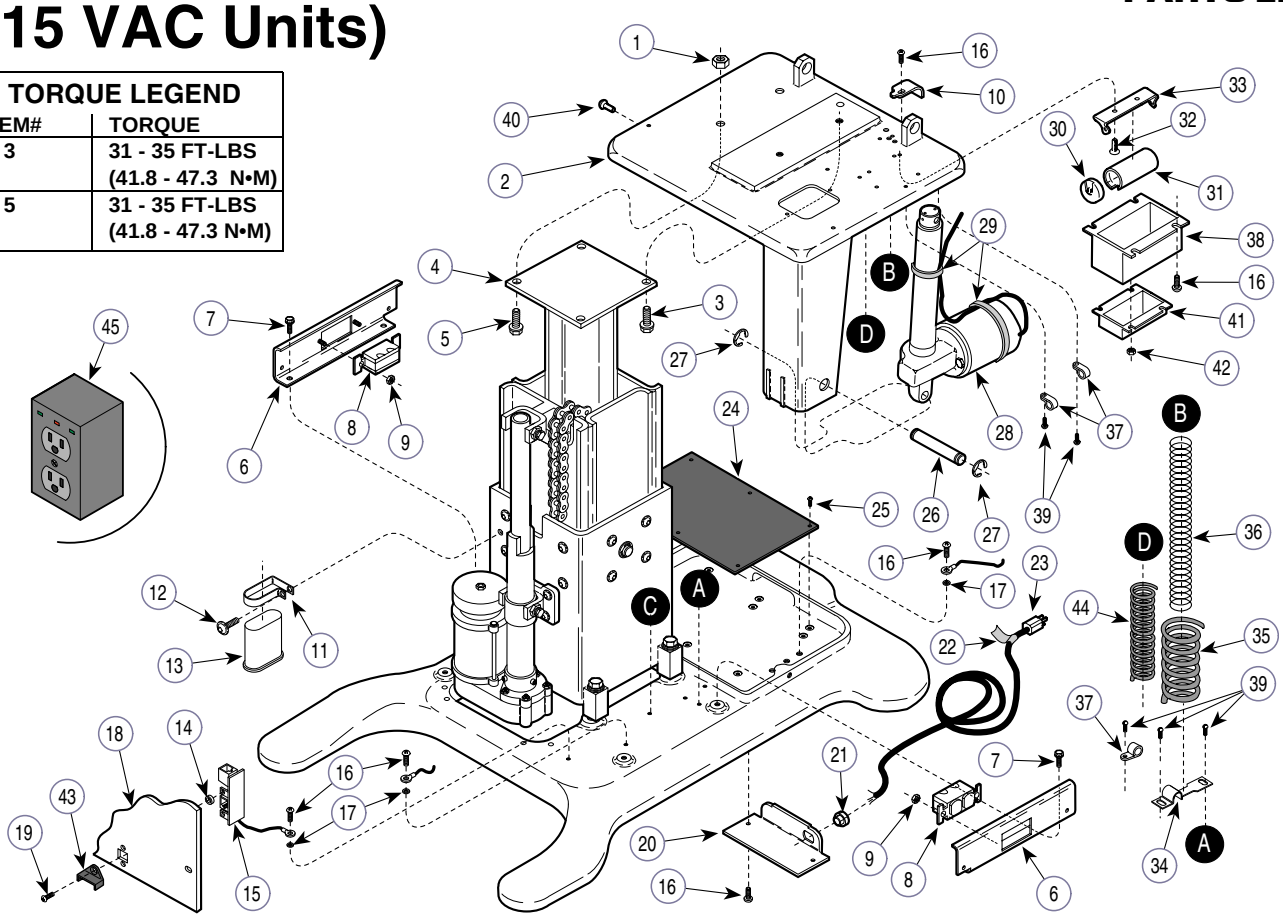
Base Electrical Components (115 VAC Units)

TORQUE LEGEND	
ITEM#	TORQUE
3	31 - 35 FT-LBS (41.8 - 47.3 N•M)
5	31 - 35 FT-LBS (41.8 - 47.3 N•M)



MA345603

Used on units with Serial Number JY2931 and LS1303 thru Present

Item	Part No.	Description	Qty.
1	041-0375-10	Nut	2
2		Column Adapter Weldment (Refer to "Seat Components" Elsewhere)	Ref
3	040-0375-38	Screw (Apply Loctite #042-0025-00)	2
4		Column (Refer to "Column Components" Elsewhere)	Ref
5	040-0375-38	Screw	4
6	030-0936-10	Receptacle Mounting Weldment	1
7	040-0250-88	Screw	4
8	015-0083-02	Duplex Receptacle	2
9	041-0008-02	Nut	4
10	050-3728-00	Slot Cover (Non-Programmable)	1
11	050-3323-00	Capacitor Strap	1
12	042-0151-00	Screw	1
13	015-0723-03	Motor Run Capacitor	1
14	016-0138-09	Spacer	4
15	015-1173-00	Control Inlet P.C. Board	2
16	040-0010-47	Screw	29
17	045-0001-31	Lockwasher	10
18		Inner Shroud Assembly (Refer to "Base Cover Components" Elsewhere)	1
19	040-0008-79	Screw	4
20	050-3670-00	Power Inlet Bracket	1
21	015-0002-05	Strain Relief Bushing	1
22	061-0295-00	Cord Tag	1
23	015-0066-04	Cord Assembly	1
24	015-1225-00	P.C. Board Assembly (Programmable)	1
	015-1166-00	P.C. Board Assembly (Non-Program.)	1
	• 015-0346-24	• Fuse - .150 A (Programmable)	2
	• 015-0346-21	• Fuse - 1/4 A (Non-Program.)	2
	• 015-0346-22	• Fuse - 5 A (All Units)	4
25	040-0008-94	Screw	6
26	042-0048-11	Clevis Pin	1
27	042-0007-02	E-Ring	2
28	002-0498-00	Tilt Actuator	1
29	015-0013-01	Cable Tie (14.5" Long)	2
30	015-0413-00	Capacitor Cap	1
31	015-0437-02	Capacitor	1
32	040-0010-62	Screw	2
33	015-0412-00	Capacitor Bracket	1
34	050-3394-00	Spring Bracket (Early Units Only)	2
35		Harness (Refer to "Wiring Diagram")	Ref
36	525-0055-03	Extension Spring	1
37	015-0014-02	Cable Clamp (3/16")	8
38	050-3871-00	Connection Cover (Program. Only)	1
	050-3332-00	Connection Cover (Non-Program. Only)	1
39	040-0010-47	Screw	3
40	042-0153-00	Drive Rivet	6
41	050-3863-00	Sensor Wire Cover (Program. Only)	1
42	041-0008-02	Nylock Nut (Program. Only)	2
43	016-0750-00	Inlet Board Cover	2
44		Harness (Refer to "Wiring Diagram")	Ref
45	002-0909-00	Surge Suppressor Kit (optional)	1
46	015-0013-02	Cable Tie (3.87" {Not Shown})	7
47	015-0017-00	Cable Tie W/ Mtg. Hole (Not Shown)	2
48	015-0010-04	4" Spiral Wrap (Not Shown)	2

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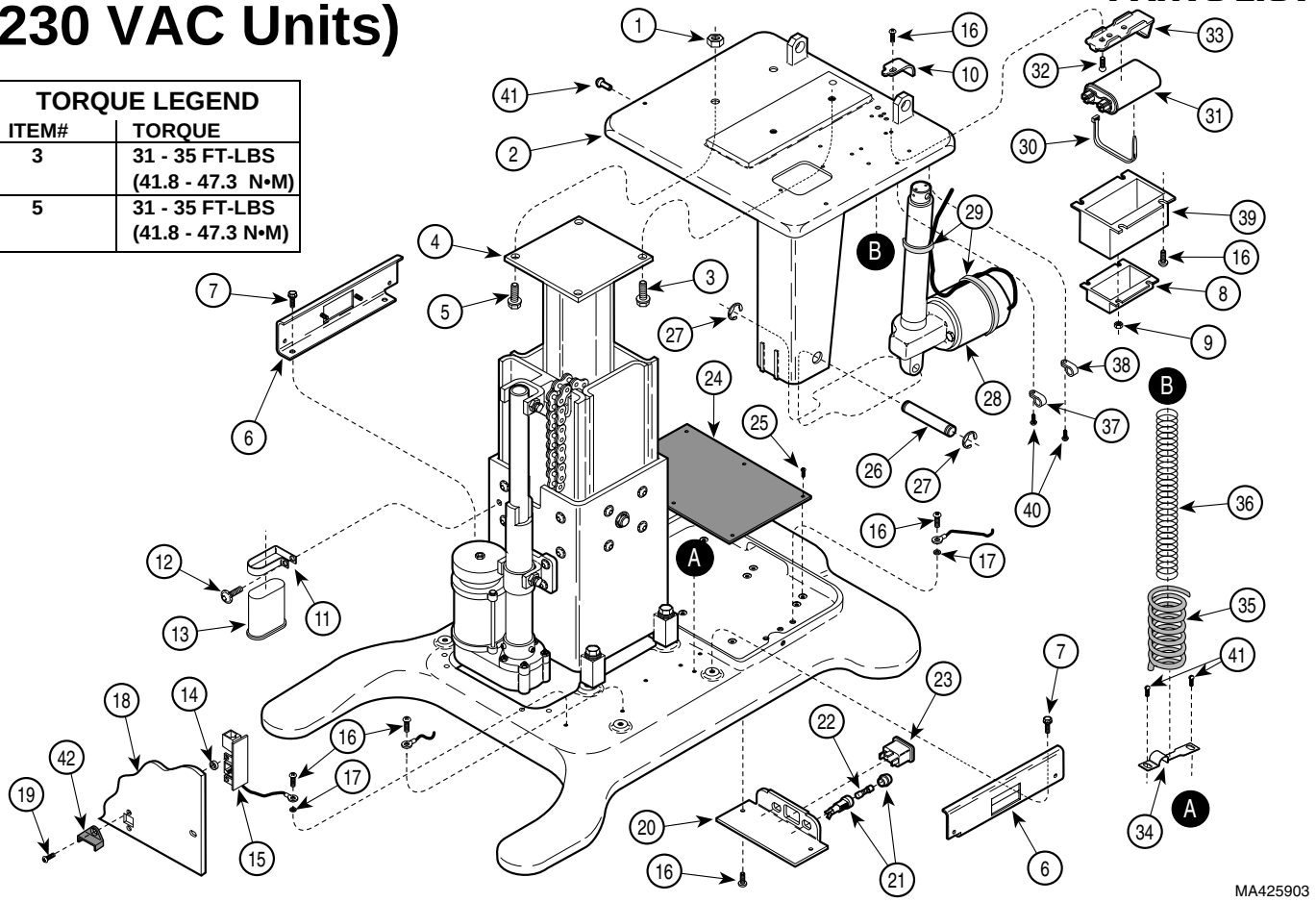
Base Electrical Components (230 VAC Units)

TORQUE LEGEND	
ITEM#	TORQUE
3	31 - 35 FT-LBS (41.8 - 47.3 N•M)
5	31 - 35 FT-LBS (41.8 - 47.3 N•M)



Used on units with Serial Number HY1000 thru HY1004 and HZ1000 thru HZ1008

Item	Part No.	Description	Qty.
1	041-0375-10	Nut	2
2		Column Adapter Weldment (Refer to "Seat Components" Elsewhere)	Ref
3	040-0375-38	Screw (Apply Loctite #042-0025-00)	2
4		Column (Refer to "Column Components" Elsewhere)	Ref
5	040-0375-38	Screw	4
6	030-0936-10	Receptacle Mounting Weldment	1
7	040-0250-88	Screw	4
8	050-3863-00	Sensor Wire Cover (Program. Only)	1
9	041-0008-02	Nylock Nut (Program. Only)	2
10	050-3728-00	Slot Cover (Non-Programmable)	1
11	050-3323-00	Capacitor Strap	1
12	042-0151-00	Screw	1
13	015-0723-03	Motor Run Capacitor	1
14	016-0138-09	Spacer	4
15	015-1173-00	Control Inlet P.C. Board	2
16	040-0010-47	Screw	27
17	045-0001-31	Lockwasher	7
18		Inner Shroud Assembly (Refer to "Base Cover Components" Elsewhere)	1
19	040-0008-79	Screw	4
20	050-3837-00	Power Inlet Bracket	1
21	015-1059-00	Fuseholder	1
22	015-0346-22	Fuse - 8 A	1
23	015-0639-00	AC Connector Receptacle	1
24	015-1225-01	P.C. Board Assembly (Programmable)	1
	015-1166-01	P.C. Board Assembly (Non-Program.)	1
	• 015-0346-24	• Fuse - .150 A (Programmable)	2
	• 015-0346-21	• Fuse - 1/4 A (Non-Program.)	1
	• 015-0346-22	• Fuse - 5 A (All Units)	4
25	040-0008-94	Screw	6
26	042-0048-11	Clevis Pin	1
27	042-0007-02	E-Ring	2
28	002-0498-01	Tilt Actuator	1
29	015-0013-01	Cable Tie (14.5" Long)	2
30	015-0016-00	Cable Tie (11.5" Long)	2
31	015-0723-00	Capacitor	1
32	040-0010-62	Screw	2
33	050-3755-00	Capacitor Bracket	1
34	050-3394-00	Spring Bracket (Early Units Only)	2
35		Main Harness (Refer to "Wiring Diagram" Elsewhere)	Ref
36	525-0055-03	Extension Spring	1
37	015-0014-02	Cable Clamp (3/16")	6
38	015-0014-04	Cable Clamp (1/4")	2
39	050-3871-00	Connection Cover (Program. Only)	1
	050-3332-00	Connection Cover (Non-Program. Only)	1
40	040-0010-47	Screw	4
41	042-0153-00	Drive Rivet	6
42	016-0750-00	Inlet Board Cover)	2
43	015-0013-02	Cable Tie (3.87" {Not Shown})	7
44	015-0017-00	Cable Tie W/ Mtg. Hole (Not Shown)	2
45	015-0010-04	4" Spiral Wrap (Not Shown)	2

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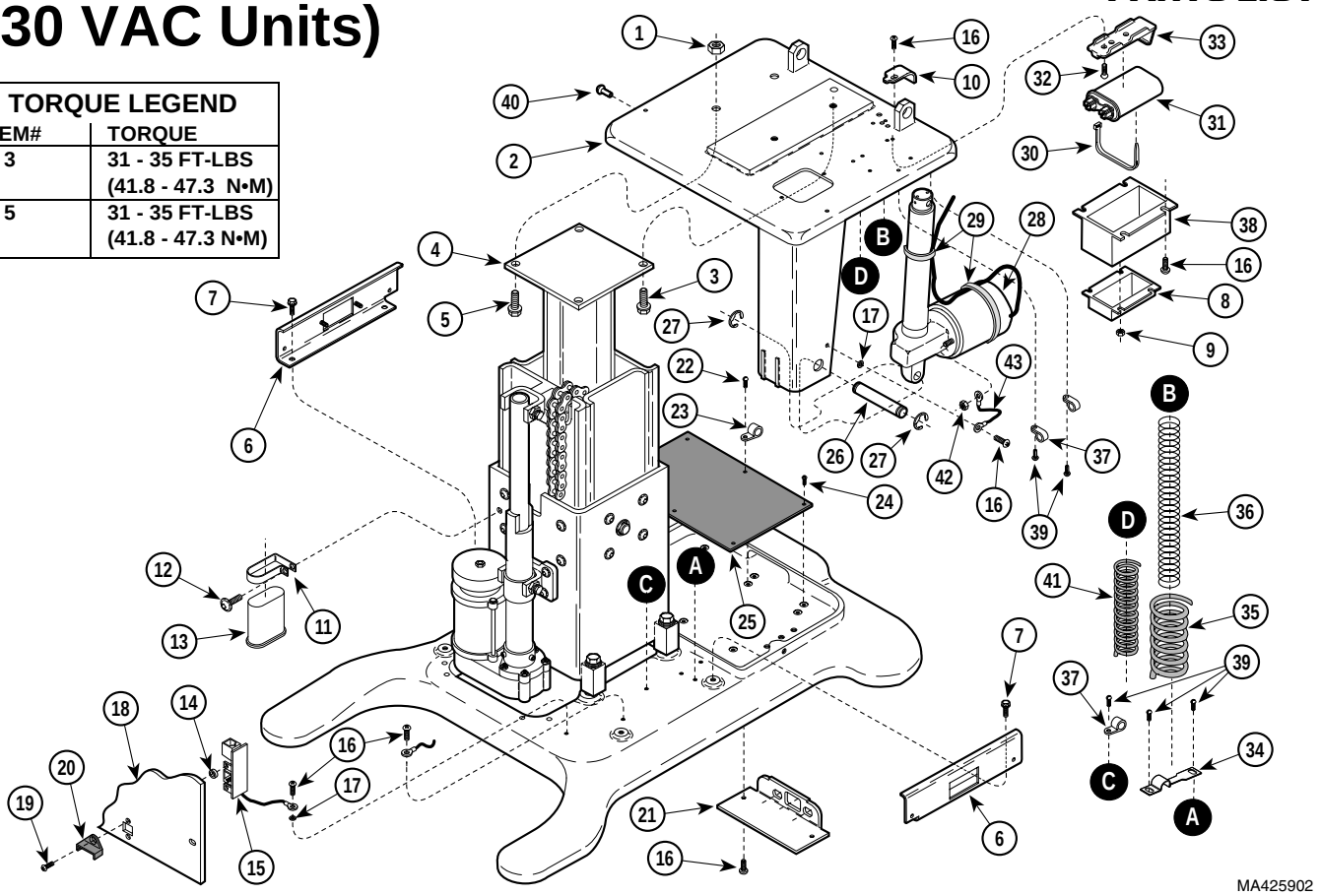
Base Electrical Components (230 VAC Units)

TORQUE LEGEND	
ITEM#	TORQUE
3	31 - 35 FT-LBS (41.8 - 47.3 N•M)
5	31 - 35 FT-LBS (41.8 - 47.3 N•M)



MA425902

Used on units with Serial Number HY1005 thru Present and HZ1000 thru HZ1071

Item	Part No.	Description	Qty.
1	041-0375-10	Nut	2
2		Column Adapter Weldment (Refer to "Seat Components" Elsewhere)	Ref
3	040-0375-38	Screw (Apply Loctite #042-0025-00)	2
4		Column (Refer to "Column Components" Elsewhere)	Ref
5	040-0375-38	Screw	4
6	030-0936-10	Receptacle Mounting Weldment	1
7	040-0250-88	Screw	4
8	050-3863-00	Sensor Wire Cover (Program. Only)	1
9	041-0008-02	Nylock Nut (Program. Only)	2
10	050-3728-00	Slot Cover (Non-Programmable)	1
11	050-3323-00	Capacitor Strap	1
12	042-0151-00	Screw	1
13	015-0723-03	Motor Run Capacitor	1
14	016-0138-09	Spacer	4
15	015-1256-00	Inlet P.C. Board(Program. Only)	2
	015-1173-00	Inlet P.C. Board(Non-Program. Only)	2
16	040-0010-47	Screw	28
17	045-0001-31	Lockwasher	9
18		Inner Shroud Assembly (Refer to "Base Cover Components" Elsewhere)	1
19	040-0008-79	Screw	4
20	016-0750-00	Inlet Board Cover	2
21		Power Inlet Bracket (Refer to "Power Inlet Components" Elsewhere)	Ref
22	040-0008-93	Screw	1
23	015-0371-00	Cable Clamp	1
24	040-0008-94	Screw	5
25	015-1225-01	P.C. Board Assembly (Programmable)	1
	015-1166-01	P.C. Board Assembly (Non-Program.)	1
	• 015-0346-24	• Fuse - .150 A (Programmable)	2
	• 015-0346-21	• Fuse - 1/4 A (Non-Program.)	1
	• 015-0346-22	• Fuse - 5 A (All Units)	4
26	042-0048-11	Clevis Pin	1
27	042-0007-02	E-Ring	2
28	002-0498-01	Tilt Actuator	1
29	015-0013-01	Cable Tie (14.5" Long)	3
30	015-0016-00	Cable Tie (11.5" Long)	2
31	015-0723-00	Capacitor	1
32	040-0010-62	Screw	2
33	050-3755-00	Capacitor Bracket	1
34	050-3394-00	Spring Bracket (Early Units Only)	2
35		Harness (Refer to "Wiring Diagram")	Ref
36	525-0055-03	Extension Spring	1
37	015-0014-02	Cable Clamp (3/16")	AR
38	050-3871-00	Connection Cover (Program. Only)	1
	050-3332-00	Connection Cover (Non-Program. Only)	1
39	040-0010-47	Screw	4
40	042-0153-00	Drive Rivet	6
41		Harness (Refer to "Wiring Diagram")	Ref
42	041-0010-01	Locknut (Program. Only)	1
43	015-0082-04	Grounding Braid (Program. Only)	1
44	015-0013-02	Cable Tie (3.87" {Not Shown})	7
45	015-0017-00	Cable Tie W/ Mtg. Hole (Not Shown)	2
46	015-0010-04	4" Spiral Wrap (Not Shown)	2

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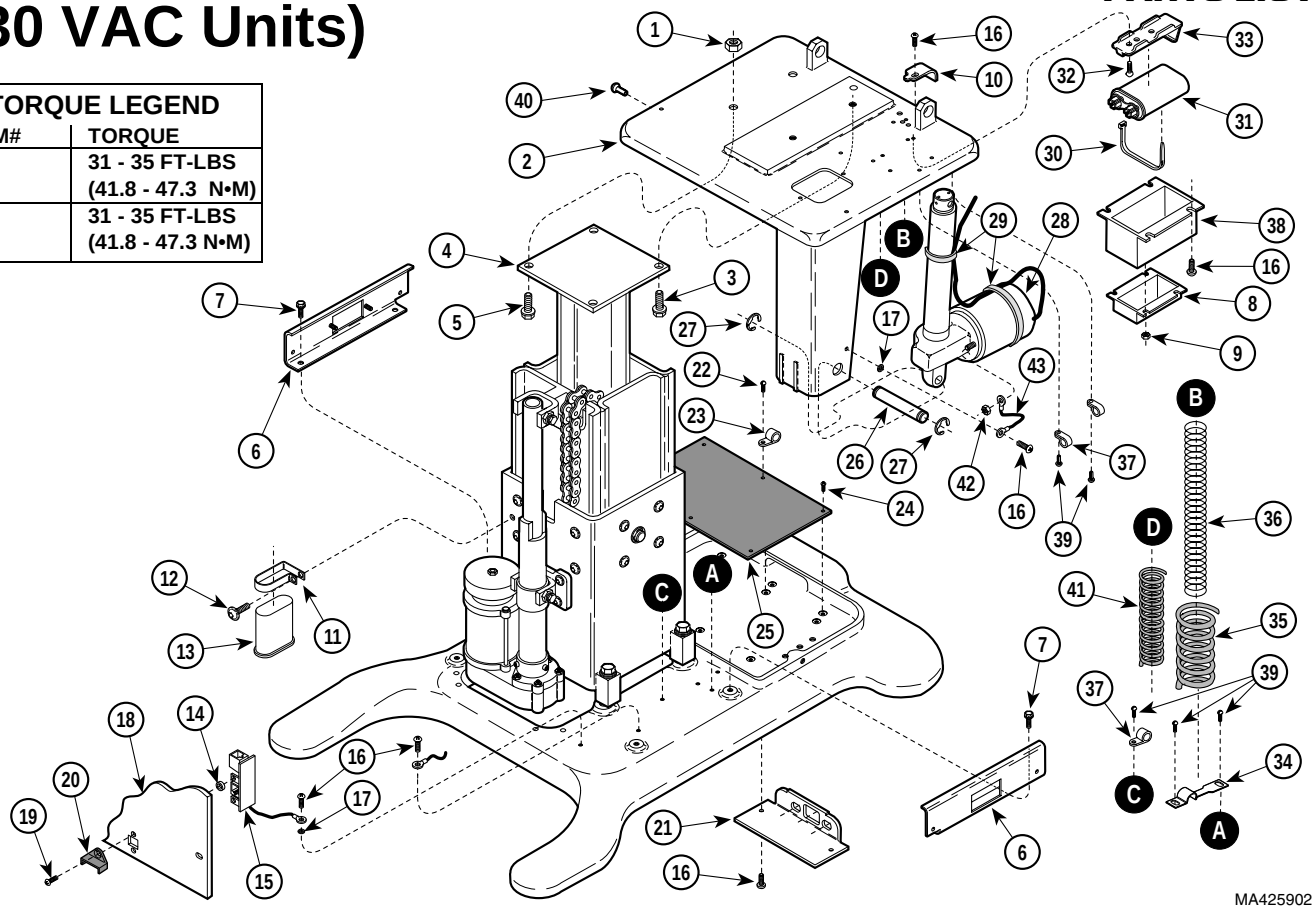
Base Electrical Components (230 VAC Units)

TORQUE LEGEND	
ITEM#	TORQUE
3	31 - 35 FT-LBS (41.8 - 47.3 N•M)
5	31 - 35 FT-LBS (41.8 - 47.3 N•M)



MA425902

Used on units with Serial Number HZ1072 thru Present

Item	Part No.	Description	Qty.
1	041-0375-10	Nut	2
2		Column Adapter Weldment (Refer to "Seat Components" Elsewhere)	Ref
3	040-0375-38	Screw (Apply Loctite #042-0025-00)	2
4		Column (Refer to "Column Components" Elsewhere)	Ref
5	040-0375-38	Screw	4
6	030-0936-10	Receptacle Mounting Weldment	1
7	040-0250-88	Screw	4
8	050-3863-00	Sensor Wire Cover (Program. Only)	1
9	041-0008-02	Nylock Nut (Program. Only)	2
10	050-3728-00	Slot Cover (Non-Programmable)	1
11	050-3323-00	Capacitor Strap	1
12	042-0151-00	Screw	1
13	015-0723-03	Motor Run Capacitor	1
14	016-0138-09	Spacer	4
15	015-1256-00	Inlet P.C. Board(Program. Only)	2
	015-1173-00	Inlet P.C. Board(Non-Program. Only)	2
16	040-0010-47	Screw	28
17	045-0001-31	Lockwasher	9
18		Inner Shroud Assembly (Refer to "Base Cover Components" Elsewhere)	1
19	040-0008-79	Screw	4
20	016-0750-00	Inlet Board Cover	2
21		Power Inlet Bracket (Refer to "Power Inlet Components" Elsewhere)	Ref
22	040-0008-93	Screw	1
23	015-0371-00	Cable Clamp	1
24	040-0008-94	Screw	5
25	015-1225-04	P.C. Board Assembly (Programmable)	1
	015-1166-01	P.C. Board Assembly (Non-Program.)	1
	• 015-0346-24	• Fuse - .150 A (Programmable)	2
	• 015-0346-21	• Fuse - 1/4 A (Non-Program.)	1
	• 015-0346-22	• Fuse - 5 A (All Units)	4
26	042-0048-11	Clevis Pin	1
27	042-0007-02	E-Ring	2
28	002-0498-01	Tilt Actuator	1
29	015-0013-01	Cable Tie (14.5" Long)	3
30	015-0016-00	Cable Tie (11.5" Long)	2
31	015-0723-00	Capacitor	1
32	040-0010-62	Screw	2
33	050-3755-00	Capacitor Bracket	1
34	050-3394-00	Spring Bracket (Early Units Only)	2
35		Harness (Refer to "Wiring Diagram")	Ref
36	525-0055-03	Extension Spring	1
37	015-0014-02	Cable Clamp (3/16")	AR
38	050-3871-00	Connection Cover (Program. Only)	1
	050-3332-00	Connection Cover (Non-Program. Only)	1
39	040-0010-47	Screw	4
40	042-0153-00	Drive Rivet	6
41		Harness (Refer to "Wiring Diagram")	Ref
42	041-0010-01	Locknut (Program. Only)	1
43	015-0082-04	Grounding Braid (Program. Only)	1
44	015-0013-02	Cable Tie (3.87" {Not Shown})	7
45	015-0017-00	Cable Tie W/ Mtg. Hole (Not Shown)	2
46	015-0010-04	4" Spiral Wrap (Not Shown)	2

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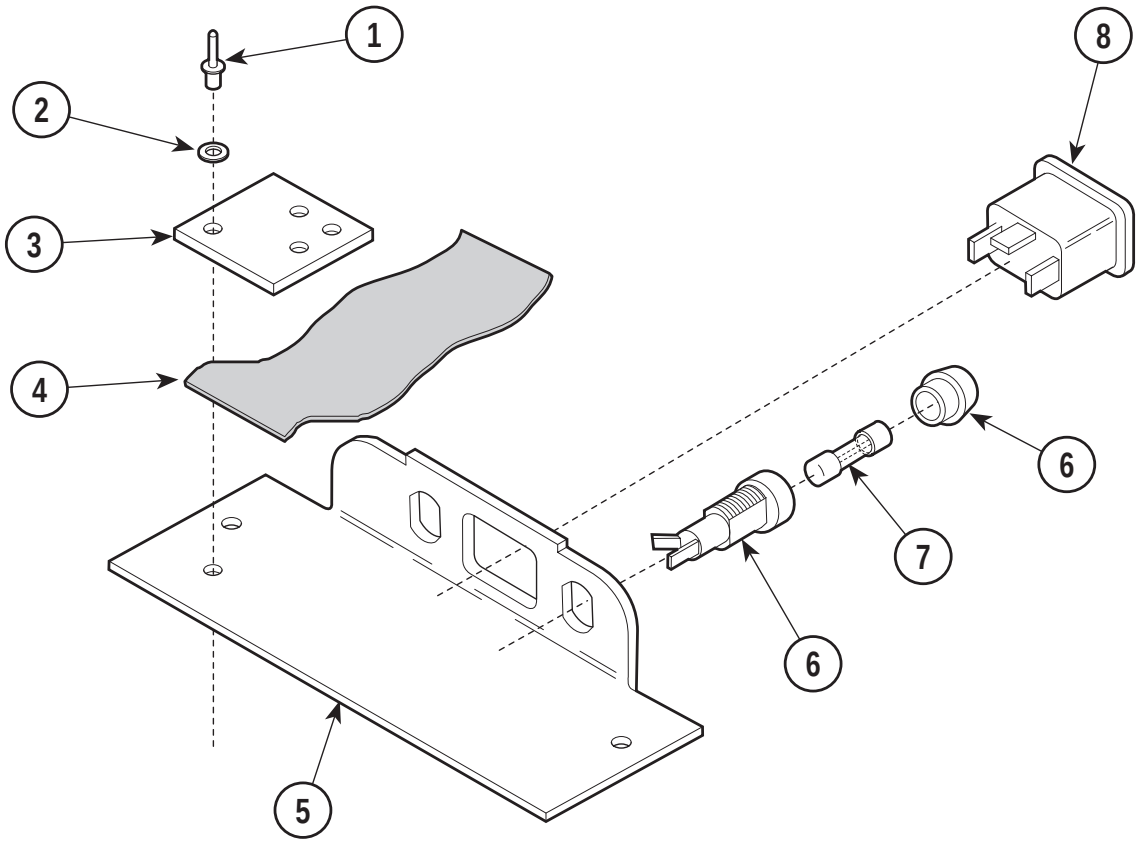
Power Inlet Components (230 VAC Units)



MA489500

Used on units with Serial Number HY1000 and HZ1000 thru Present

Item	Part No.	Description	Qty.
1	042-0010-22	Pop Rivet (Program. Only)	1
2	045-0001-39	Washer (Program. Only)	1
3	053-0967-00	Choke Mount (Program. Only)	1
4	053-0968-00	Fishpaper Insulation (Program. Only)	1
5	050-4184-00	Power Inlet Brkt	1
6	015-1259-01	Fuseholder	2
7	015-0346-19	Fuse - 8 A	2
8	015-0639-00	AC Connector Receptacle	1

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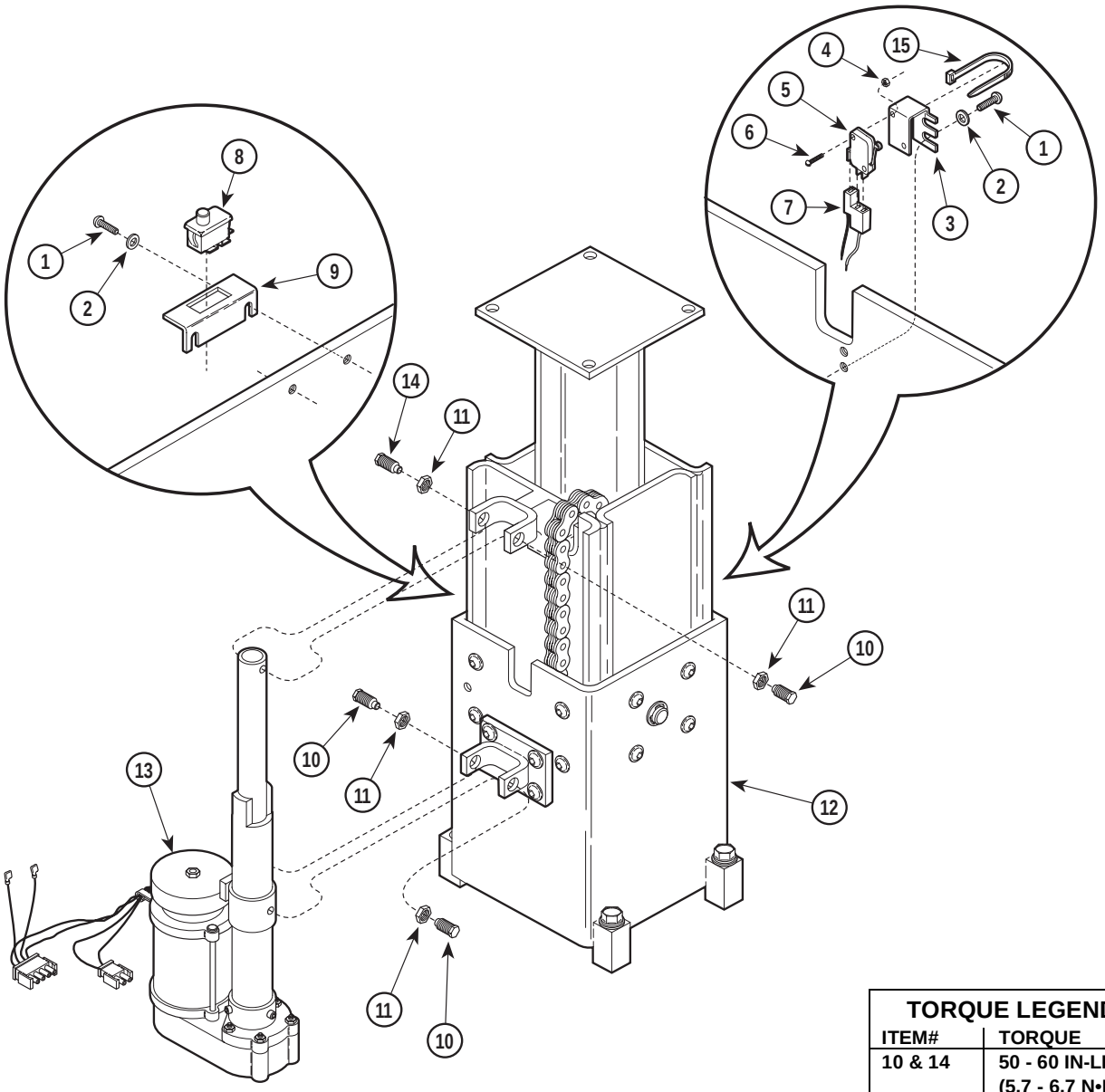
Column Components



TORQUE LEGEND	
ITEM#	TORQUE
10 & 14	50 - 60 IN-LBS (5.7 - 6.7 N•M)
11	45 - 55 FT-LBS (60.8 - 74.3 N•M)

MA345800

Used on units with Serial Number GT1000, GV1000, JX1000, JY1000, HY1000, HZ1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
1	040-0010-47	Screw	4
2	045-0001-00	Lockwasher	4
3	050-3329-10	Limit Switch Bracket	1
4	041-0001-01	Nut	2
5	015-0476-00	Switch	1
6	040-0004-09	Screw	2
7		Limit Switch Wiring (Refer to “Wiring Diagram” Elsewhere)	Ref
8	015-1055-00	Panel Mount Switch	1
9	050-3328-10	Switch Bracket	1
10	051-0769-00	Zinc Pivot Screw (Apply Loctite #042-0025-00)	3
11	041-0625-01	Jam Nut	4
12	002-0587-00	120V Domestic Column Kit (Refer to “Column Assembly” Elsewhere [Includes Capacitor and Actuator])	Ref
	002-0588-00	240V Export Column Kit (Refer to “Column Assembly” Elsewhere [Includes Capacitor and Actuator])	Ref
	002-0589-00	Column Kit (Refer to “Column Assembly” Elsewhere [w/o Capacitor-Actuator])	Ref
13	002-0497-00	120V. Base Actuator	1
	002-0497-01	240V. Base Actuator	1
14	051-0769-02	Zinc Pivot Screw w/Hole (Apply Loctite #042-0025-00)	1
15	015-0013-02	Cable Tie	1
16	015-0013-00	Cable Tie (Not Shown)	1

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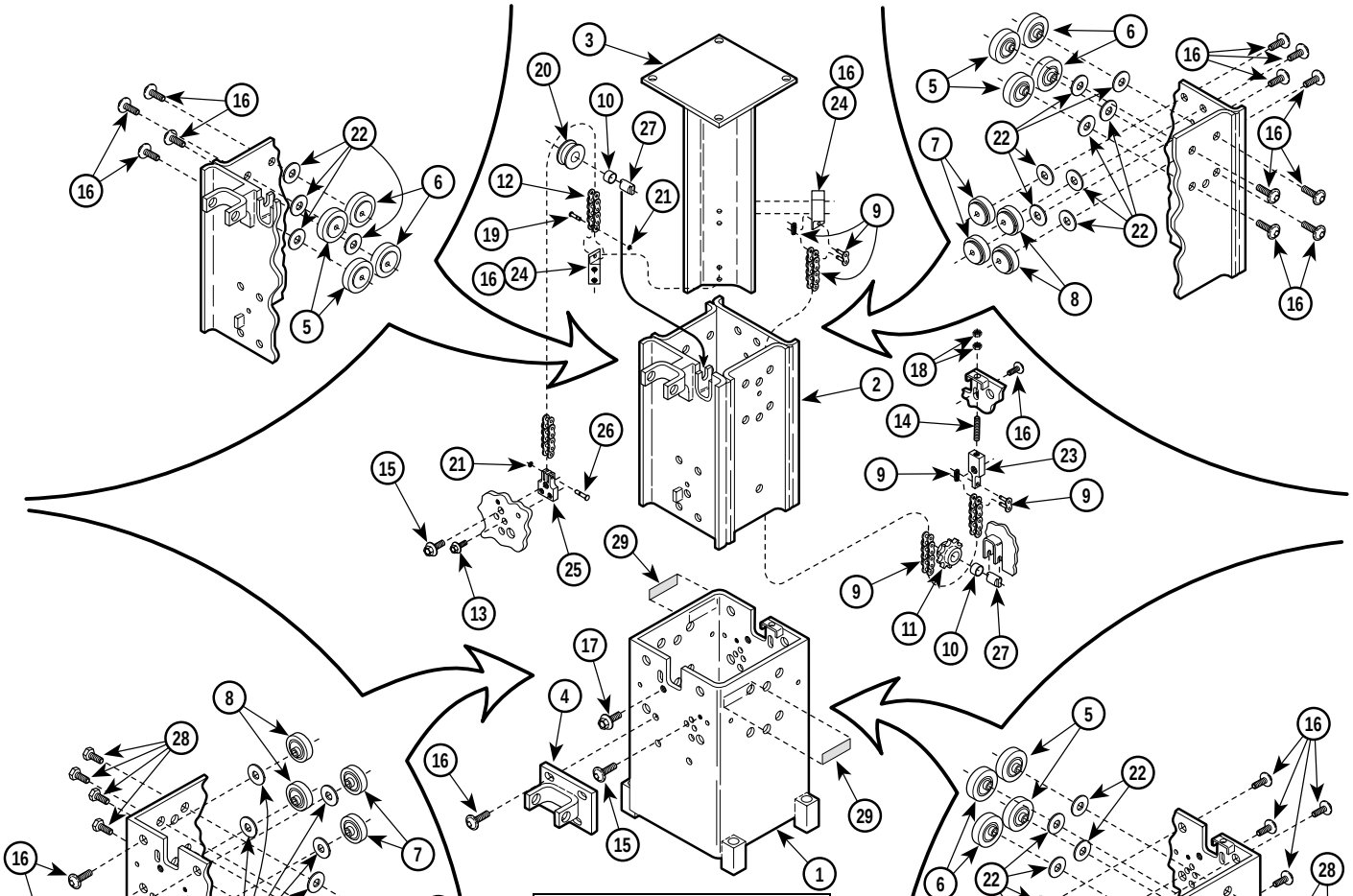
Column Assembly


TORQUE LEGEND
ITEM# | TORQUE
13 | 8 - 10 FT-LBS (10.8 - 13.6 N•M)
15 | 17 - 20 FT-LBS (23 - 27.1 N•M)
16 & 28 | 23 - 27 FT-LBS) (28.8 - 36.4 N•M) (With Actuator Installed)
17 | 17 - 20 FT-LBS (23 - 27.1 N•M)

MA345901

Used on units with Serial Number GT1000, GV1000, JX1000, JY1000, HY1000, HZ1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
		Column Assembly (Includes Items 1 thru 28)	1
1	• 030-0903-10	• Outer Slide Weldment	1
2	• 030-0902-10	• Middle Slide Weldment	1
3	• 030-0901-10	• Inner Slide Weldment	1
4	• 030-0931-10	• Lower Actuator Support	1
5	• 029-1798-00	• Tire / Spindle Bearing Assembly	8
6	• 029-1798-01	• Tire / Spindle Bearing Assembly	8
7	• 029-1798-02	• Tire / Spindle Bearing Assembly	6
8	• 029-1798-03	• Tire / Spindle Bearing Assembly	6
9	• 016-0047-00	• Chain Assembly (Incl. Connectors)	1
10	• • 016-0149-00	• • Sleeve Bearing	2
11	• 029-3036-00	• Sprocket (Includes Item 10)	1
12	• 016-0454-00	• Leaf Chain	1
13	• 040-0250-95	• Screw	2
14	• 040-0312-20	• Set Screw	1
15	• 040-0312-24	• Screw	2
16	• 042-0151-00	• Screw	27
17	• 040-0375-38	• Screw	1
18	• 041-0312-00	• Jam Nut (Apply Loctite #042-0025-00)	2
19	• 057-0400-00	• Chain Pin	1
20	• 057-0401-00	• Chain Roller	1
21	• 042-0101-02	• Retaining Ring - External	2
22	• 045-0001-89	• Washer	28
23	• 051-0720-00	• Drawbolt Chain End	1
24	• 051-0765-00	• 45° Chain End	1
25	• 051-0766-00	• Leaf Chain End	1
26	• 057-0400-02	• Chain Pin	1
27	• 057-0384-00	• Sprocket Hub	2
28	• 040-0312-59	• Screw	10
29	061-0045-00	Caution Label	2

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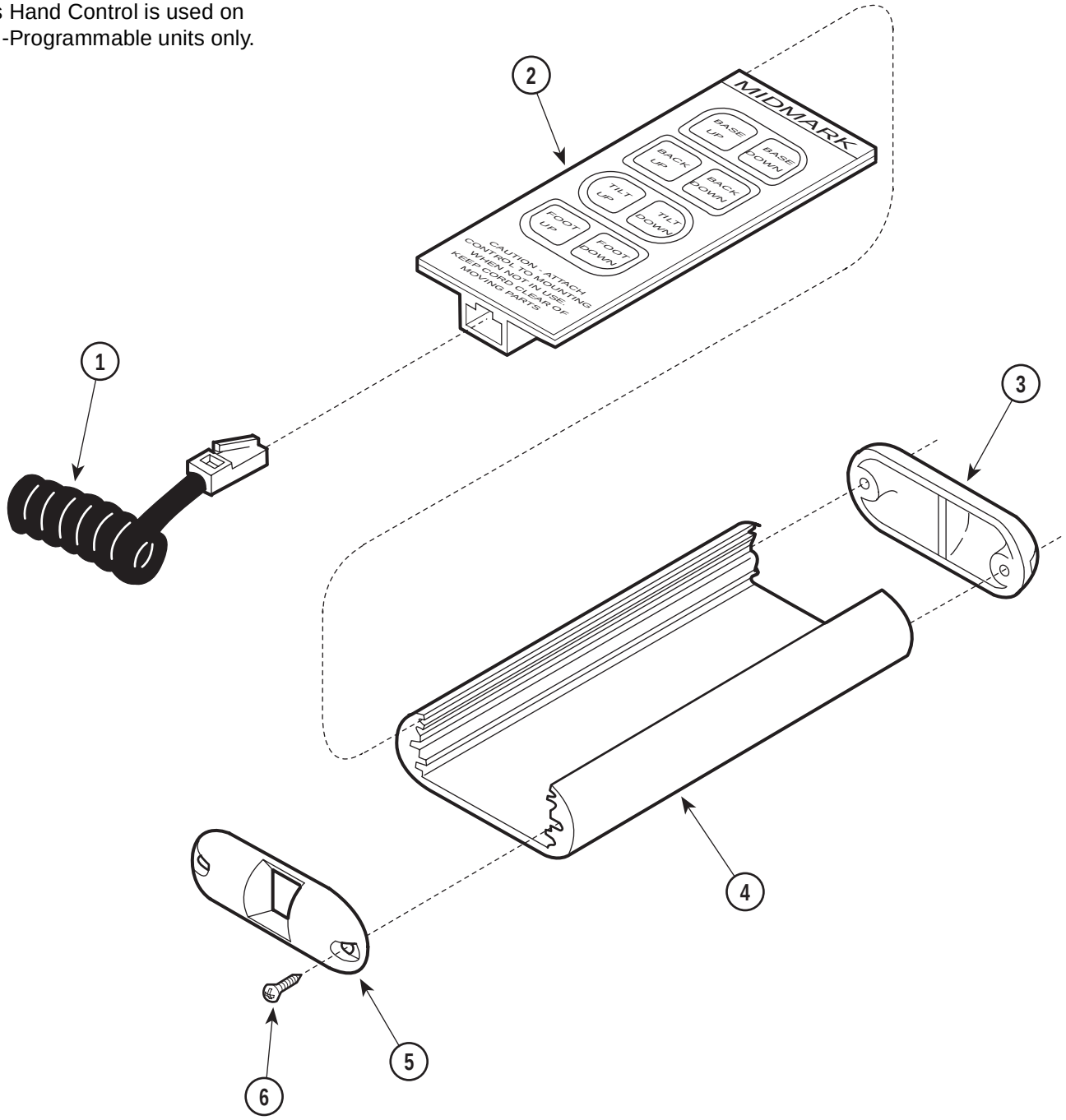
Hand Control Assembly

NOTE:
This Hand Control is used on
Non-Programmable units only.



MA278600

Used on units with Serial Number GT1000 thru Present

Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
	002-0499-00	Hand Control Assembly (Includes Items 1 thru 6)	1	3	• 053-0412-00	• Top End Cap	1
1	• 015-0839-00	• Modular Coil Cord	1	4	• 021-0028-00	• Hand Control Tube	1
2	• 015-0995-00	• Switch Panel	1	5	• 053-0526-00	• Bottom End Cap	1
				6	• 040-0006-08	• Screw	4

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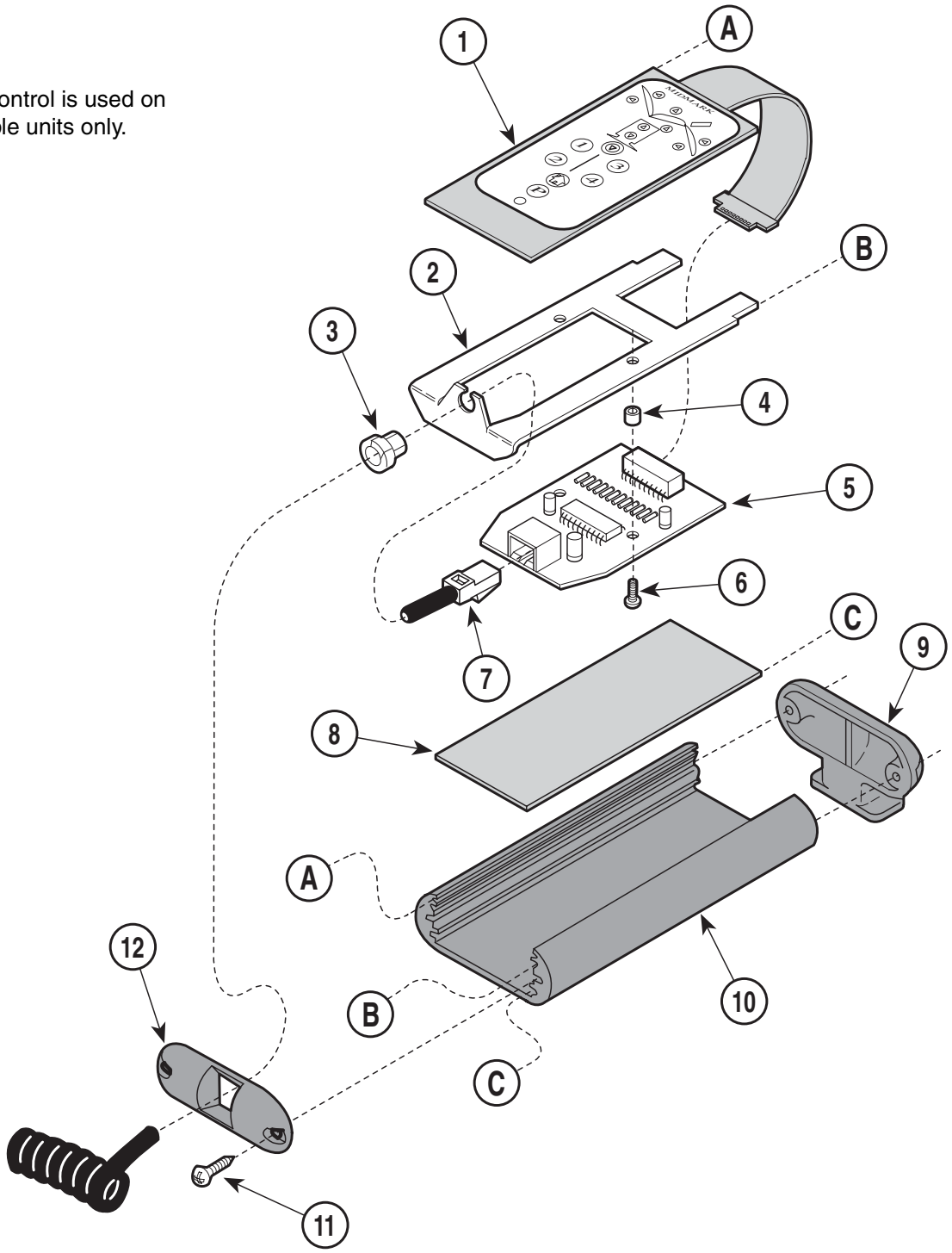
Hand Control Assembly

NOTE:
This Hand Control is used on Programmable units only.



MA346100

Used on units with Serial Number GV1000 thru Present

Item	Part No.	Description	Qty.
	002-0578-00	Hand Control Assembly (Includes Items 1 thru 12)	1
1	• 015-1127-00	• Hand Control Switch	1
2	• 050-3804-00	• Interface Card Bracket	1
3	• 015-0002-06	• Strain Relief	1
4	• 053-0110-12	• Eolled Spacer	2
5	• 015-1066-00	• Hand Control PC Board Assembly	1
6	• 040-0008-79	• Screw	2
7	• 015-0839-00	• Coiled Coil Set Assembly	1
8	• 053-0092-07	• Fishpaper Insulator	1
9	• 053-0412-00	• Top End Cap	1
10	• 021-0028-01	• Hand Control Tube	1
11	• 040-0006-08	• Screw	4
12	• 053-0526-00	• Bottom End Cap	1

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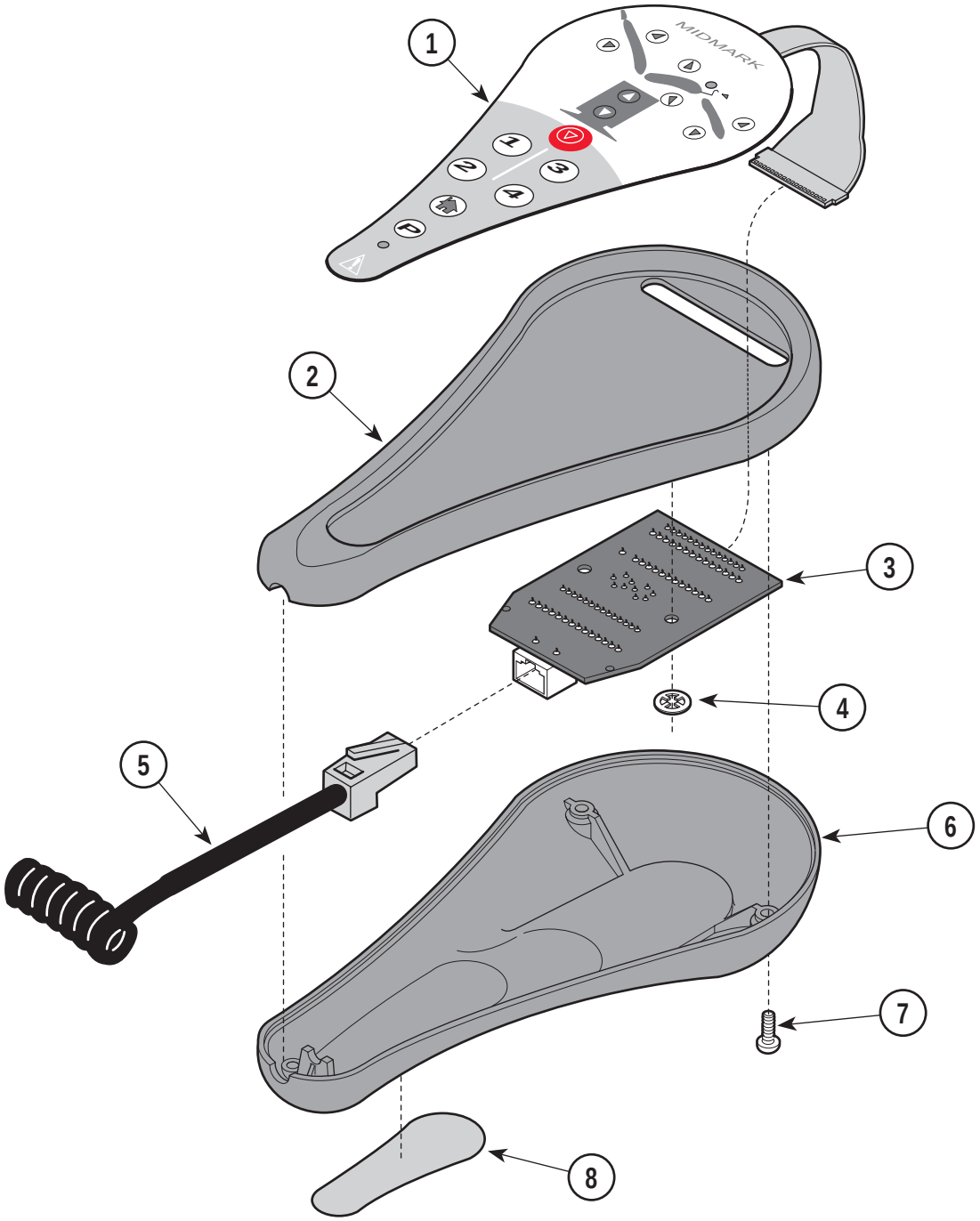
Hand Control Assembly (Programmable)



MA415100

Used on units with Serial Number HZ1000, JY1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
	002-0604-00	Programmable Hand Control Assembly (Includes Items 1 thru 8)	1
	002-0604-01	Programmable Hand Control-[CE] Assembly (Includes Items 1 thru 7)	1
1	• 015-1116-00	• Membrane Switch Panel	1
2	• 053-0867-00	• Hand Control Top	1
3	• 015-1066-00	• Hand Control PC Board	1
4	• 042-0159-01	• Push-On Retaining Ring	2
5	• 015-0839-00	• Coiled Coil Set Assembly	1
6	• 053-0868-00	• Hand Control Bottom	1
7	• 042-0168-00	• Screw	4
8	• 061-0648-00	• Back Label (Domestic Units Only)	1

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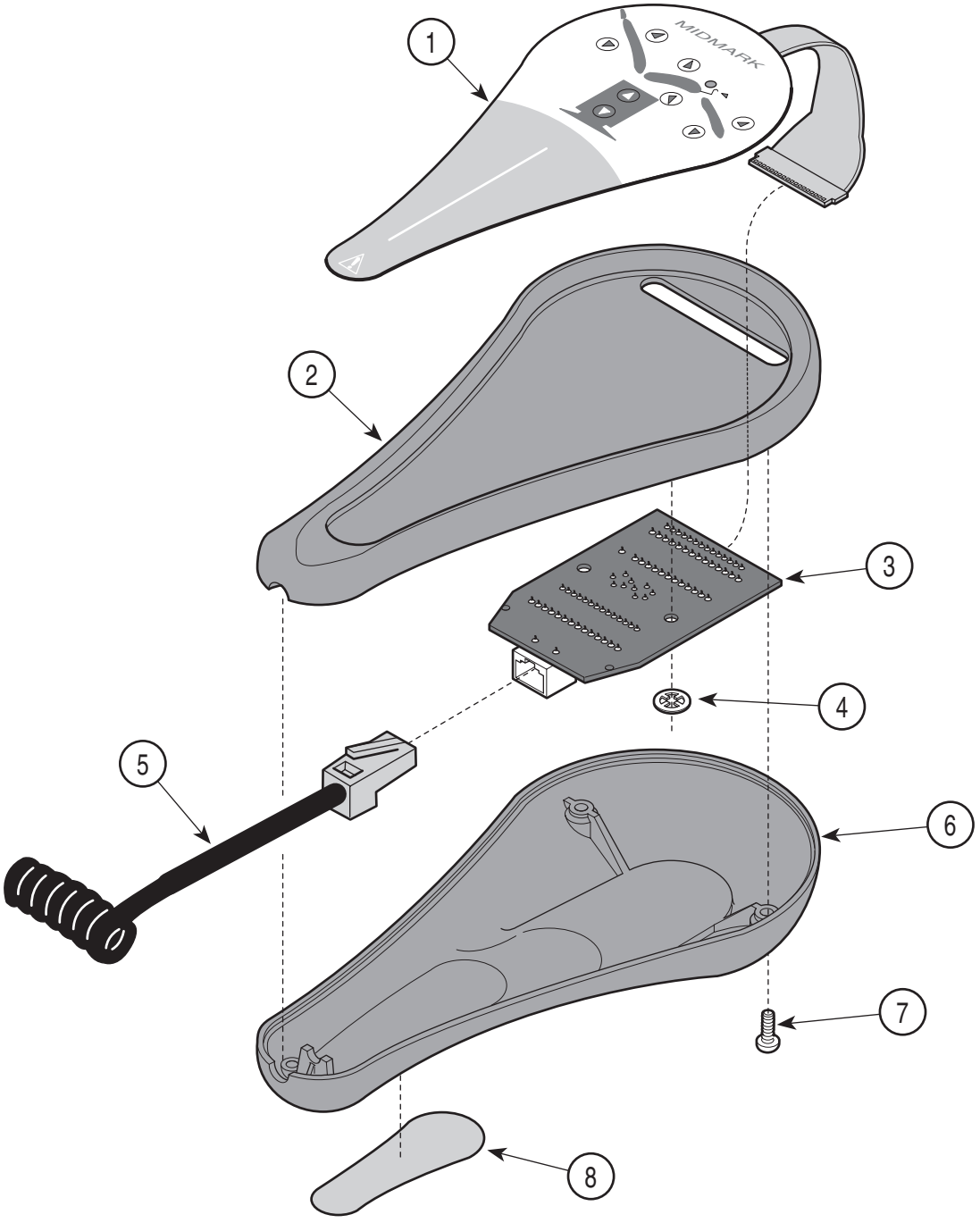
Hand Control Assembly (Non-Programmable)



MA415101

Used on units with Serial Number HY1000 and JX1000 thru HY1060 and JX7669

Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
	002-0603-00	Non-Programmable Hand Control-[Dom.] Assembly (Includes Items 1 thru 8)	1	3	• 015-1291-00	• Hand Control PC Board	1
				4	• 042-0159-01	• Push-On Retaining Ring	2
	002-0603-01	Non-Programmable Hand Control-[CE] Assembly (Includes Items 1 thru 7)	1	5	• 015-0839-00	• Coiled Coil Set Assembly	1
				6	• 053-0868-00	• Hand Control Bottom	1
1	• 015-1134-00	• Membrane Switch Panel	1	7	• 042-0168-00	• Screw	4
2	• 053-0867-00	• Hand Control Top	1	8	• 061-0648-00	• Back Label (Domestic Units Only)	1

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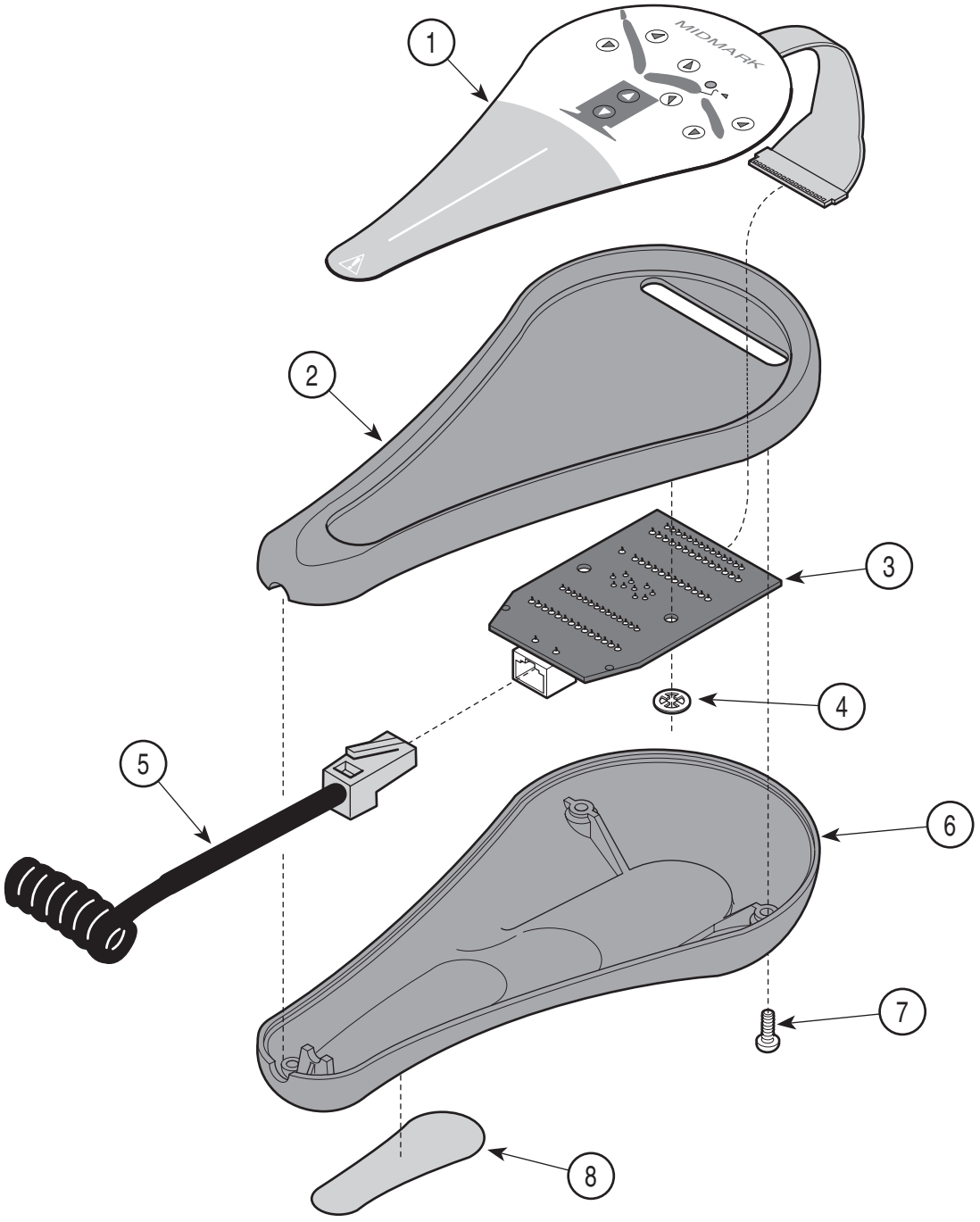
Hand Control Assembly (Non-Programmable)



MA415101

Used on units with Serial Number HY1061 and JX7670 thru Present

Item	Part No.	Description	Qty.
	002-0603-00	Non-Programmable Hand Control-[Dom.] Assembly (Includes Items 1 thru 8)	1
	002-0603-01	Non-Programmable Hand Control-[CE] Assembly (Includes Items 1 thru 7)	1
1	• 015-1438-00	• Membrane Switch Panel	1
2	• 053-0867-00	• Hand Control Top	1
3	• 015-1291-00	• Hand Control PC Board	1
4	• 042-0159-01	• Push-On Retaining Ring	2
5	• 015-0839-00	• Coiled Coil Set Assembly	1
6	• 053-0868-00	• Hand Control Bottom	1
7	• 042-0168-00	• Screw	4
8	• 061-0648-00	• Back Label (Domestic Units Only)	1
9	• 175593	• Tape-Strap Pack (Not Shown)	AR

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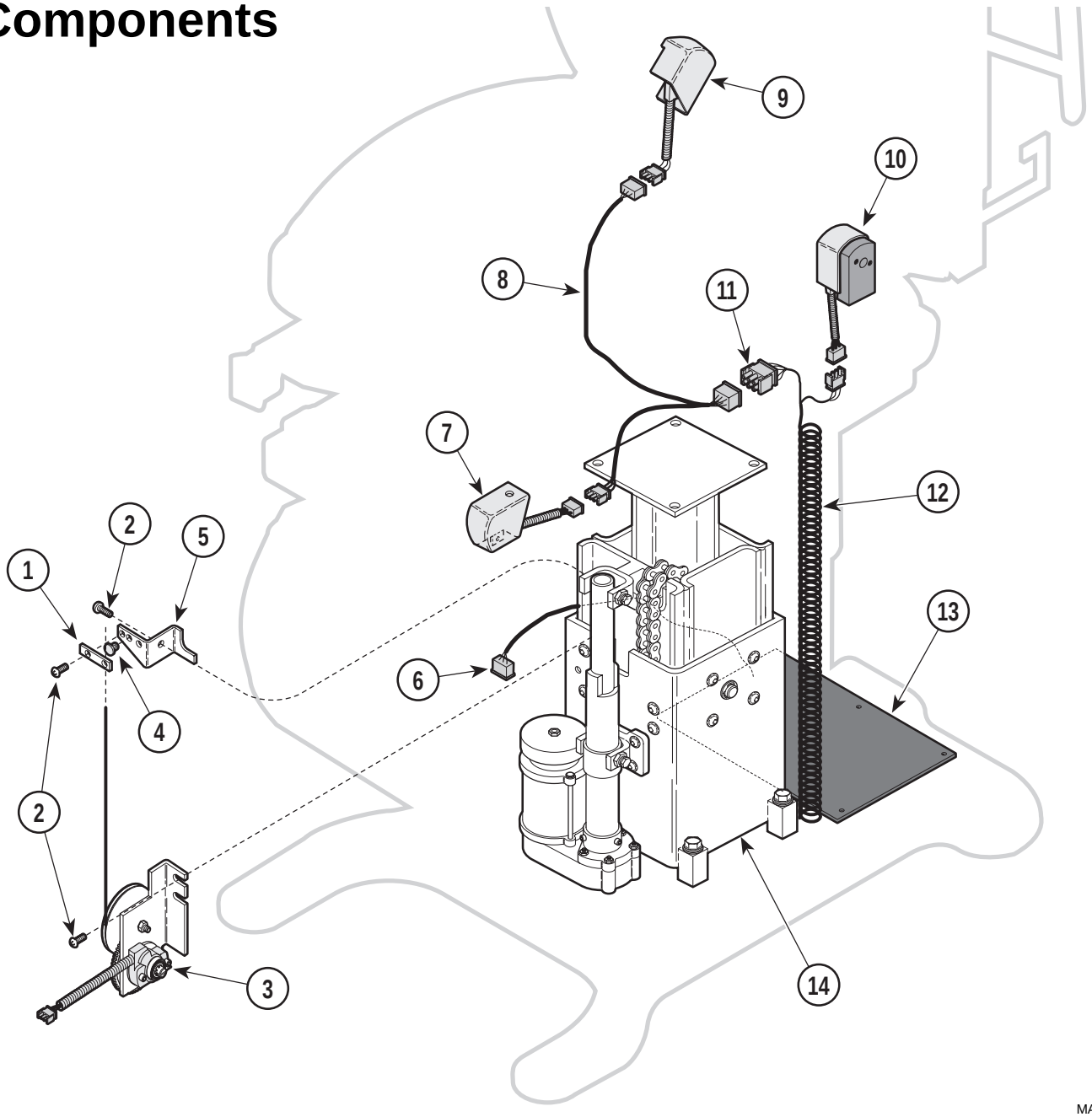
Program Position Components



MA346400

Used on units with Serial Number GV1000, JY1000, HZ1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
1	050-3748-00	Cable Clamp	1
2	040-0006-08	Screw	4
3		Reducer Assembly (Refer to “Base Reducer Assembly” Elsewhere)	Ref
4	053-0871-00	Grommet Bumper	1
5	050-3724-00	Cable Bracket	1
6		Column Sensor Harness (Refer to “Wiring Diagram” Elsewhere)	Ref
7		Foot Sensor (Refer to “Foot Sensor Components” Elsewhere)	Ref
8		Seat Sensor Harness (Refer to “Wiring Diagram” Elsewhere)	Ref
9		Back Sensor (Refer to “Back Sensor Components” Elsewhere)	Ref
10		Tilt Sensor (Refer to “Tilt Sensor Components” Elsewhere)	Ref
11	015-0512-04	Connector (6 Circuit)	1
12		Sensor Retractile Harness (Refer to “Wiring Diagram” Elsewhere)	Ref
13		P.C. Board (Refer to “Base Electrical Components” Elsewhere)	Ref
14		Column Assembly (Refer to “Column Components” Elsewhere)	Ref
15	015-0013-02	Cable Tie (3.87” {Not Shown})	13
16	015-0014-02	3/16” Cable Clamp (Not Shown)	3
17	015-0013-04	Cable Tie (Not Shown)	1

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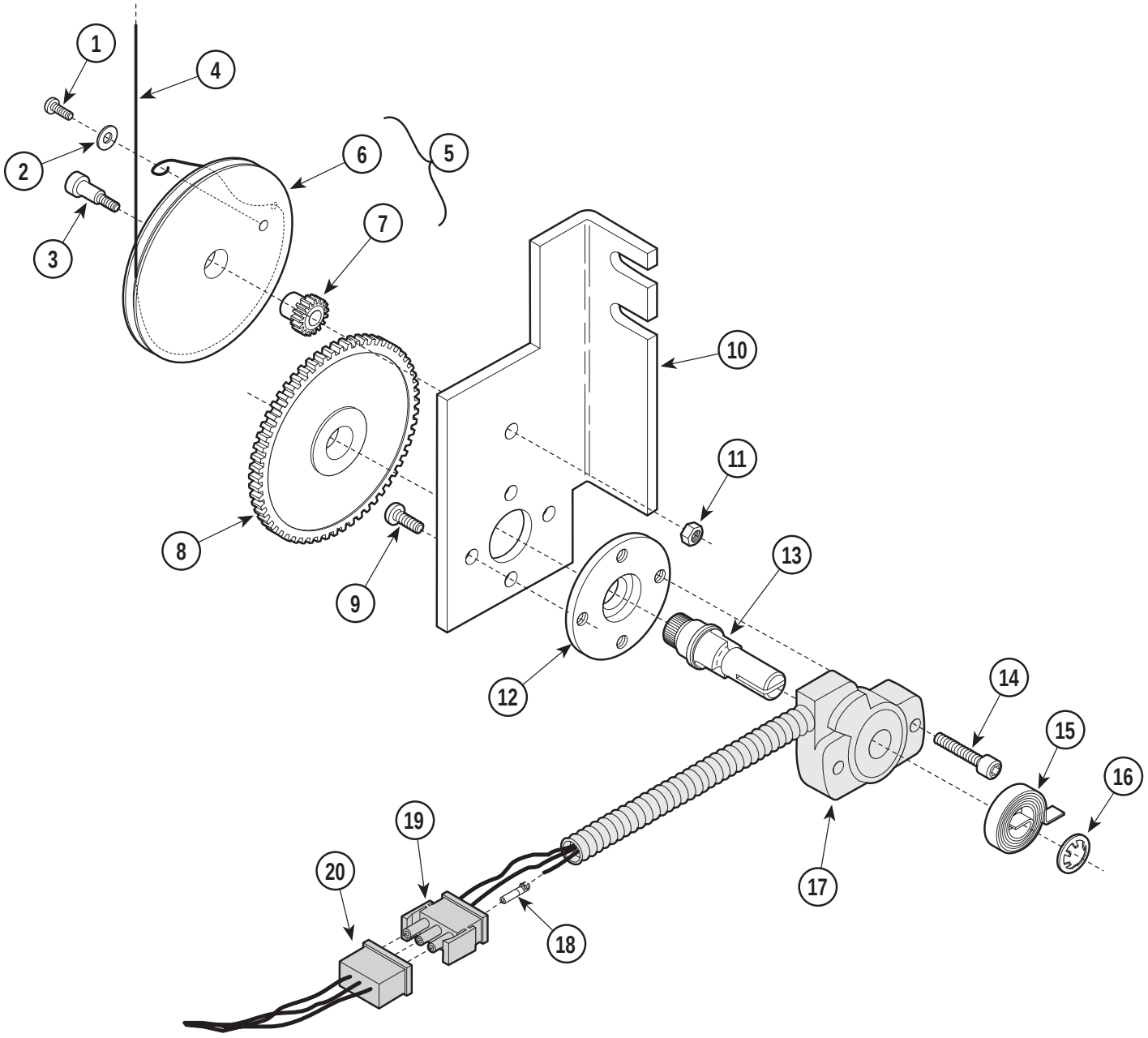
Base Reducer Assembly



MA346800

Used on units with Serial Number GV1000, JY1000, HZ1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
1	040-0006-06	Screw	1
2	045-0001-93	Nylon Washer	1
3	040-0010-29	Shoulder Screw	1
4	016-0695-00	Stainless Steel Cable (Qty = Inches)	26
5	029-2016-00	Pulley Pinion Assembly (Includes Items 6 & 7)	1
6	• 053-0866-00	• Pulley	1
7	• 016-0694-00	• Pinion	1
8	053-0865-00	Gear	2
9	040-0008-29	Screw	2
10	050-3723-10	Base Reducer Angle	1
11	041-0010-02	Nylock Hex Nut	1
12	057-0449-00	Base Reducer Hub	1
13	057-0448-00	Gear Shaft	1
14	040-0008-30	Screw (Apply Loctite #042-0024-02)	2
15	016-0693-00	Torsion Spring	1
16	042-0072-03	Circular Push On	1
17	002-0563-00	Rotary Position Sensor Assembly (Includes Items 18 & 19)	1
18	• 015-0513-00	• Pin Terminal	3
19	• 015-0512-02	• Connector (3 Circuit)	1
20		Sensor Wiring Harness (Refer to “Wiring Diagram” Elsewhere)	Ref

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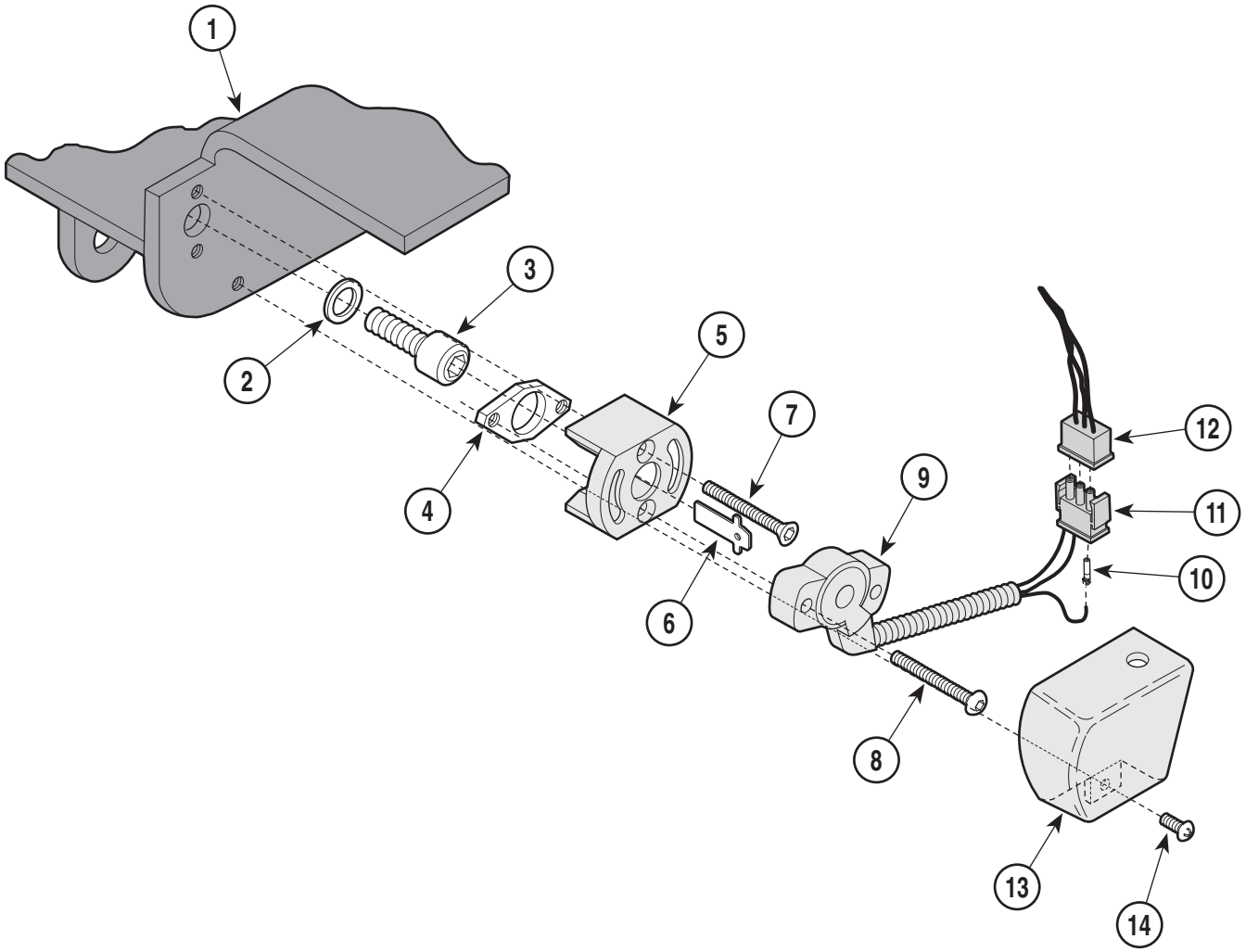
Foot Sensor Components



MA346700

Used on units with Serial Number GV1000, JY1000, HZ1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
1		Seat Weldment (Refer to “Seat Components” Elsewhere)	Ref
2	053-0858-01	Nylon Washer	1
3		Screw (Refer to “Leg Components” Elsewhere)	1
4	050-3870-00	Sensor Mount Plate	1
5	053-0853-00	Position Sensor Mount	1
6	050-3695-01	1/4 Hex Drive	1
7	040-0008-49	Screw (Apply Loctite #042-0024-02)	2
8	040-0008-93	Screw (Apply Loctite #042-0024-02)	2
9	002-0563-00	Rotary Position Sensor Assembly (Includes Items 10 & 11)	1
10	• 015-0513-00	• Pin Terminal	3
11	• 015-0512-02	• Connector (3 Circuit)	1
12		Sensor Wiring Harness (Refer to “Wiring Diagram” Elsewhere)	Ref
13	053-0855-00	Foot Sensor Cover	1
14	040-0010-47	Screw	1

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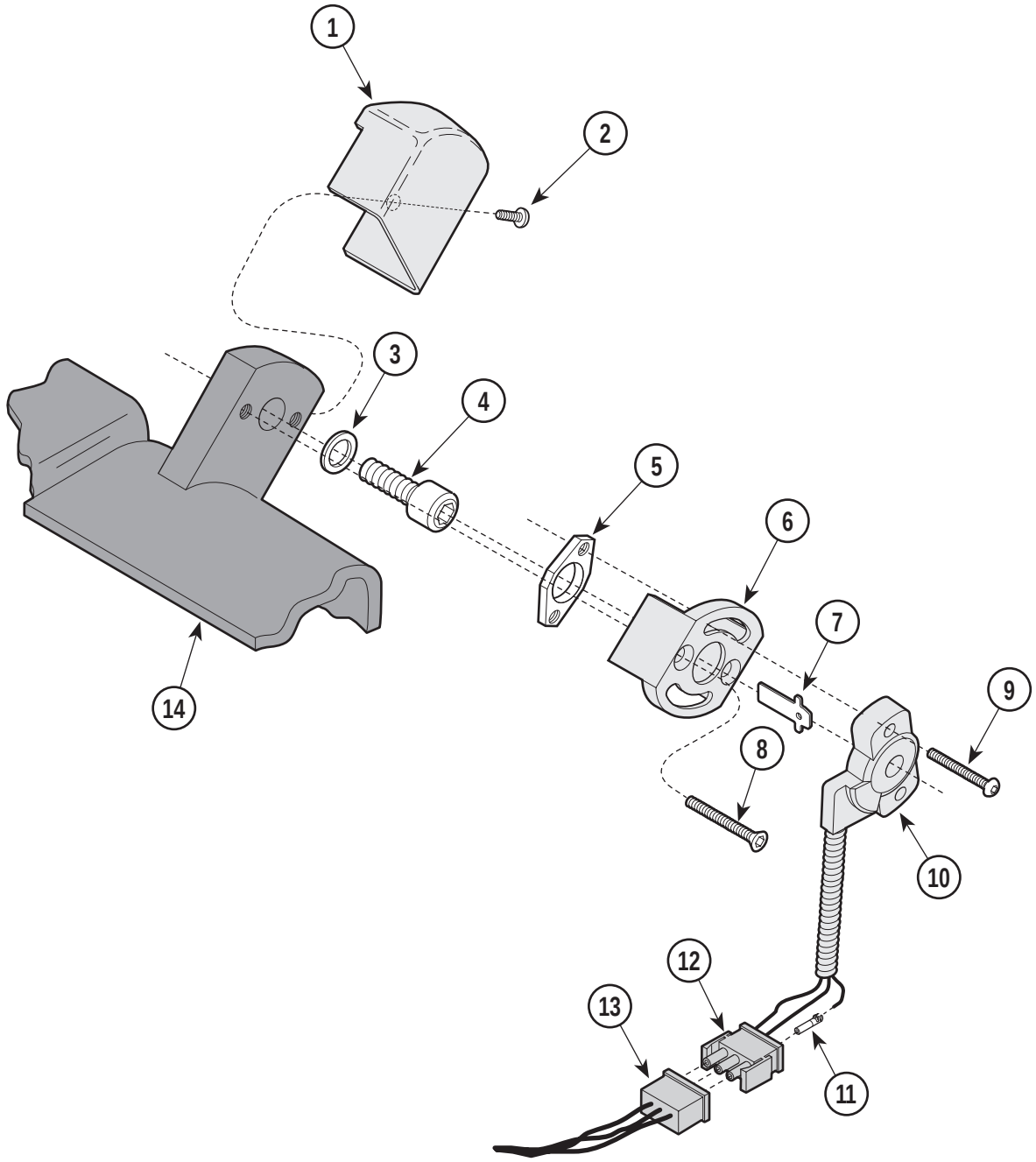
Back Sensor Components



MA346500

Used on units with Serial Number GV1000, JY1000, HZ1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
1	053-0855-01	Back Sensor Cover	1
2	040-0010-47	Screw	1
3	053-0858-00	Nylon Washer	1
4		Screw (Refer to Seat Components" Elsewhere)	1
5	050-3870-00	Sensor Mount Plate	1
6	053-0853-00	Position Sensor Mount	1
7	050-3695-00	5/16 Hex Drive	1
8	040-0008-49	Screw (Apply Loctite #042-0024-02)	2
9	040-0008-93	Screw (Apply Loctite #042-0024-02)	2
10	002-0563-00	Rotary Position Sensor Assembly (Includes Items 11 & 12)	1
11	• 015-0513-00	• Pin Terminal	3
12	• 015-0512-02	• Connector (3 Circuit)	1
13		Sensor Wiring Harness (Refer to "Wiring Diagram" Elsewhere)	Ref
14		Seat Weldment (Refer to "Seat Components" Elsewhere)	Ref

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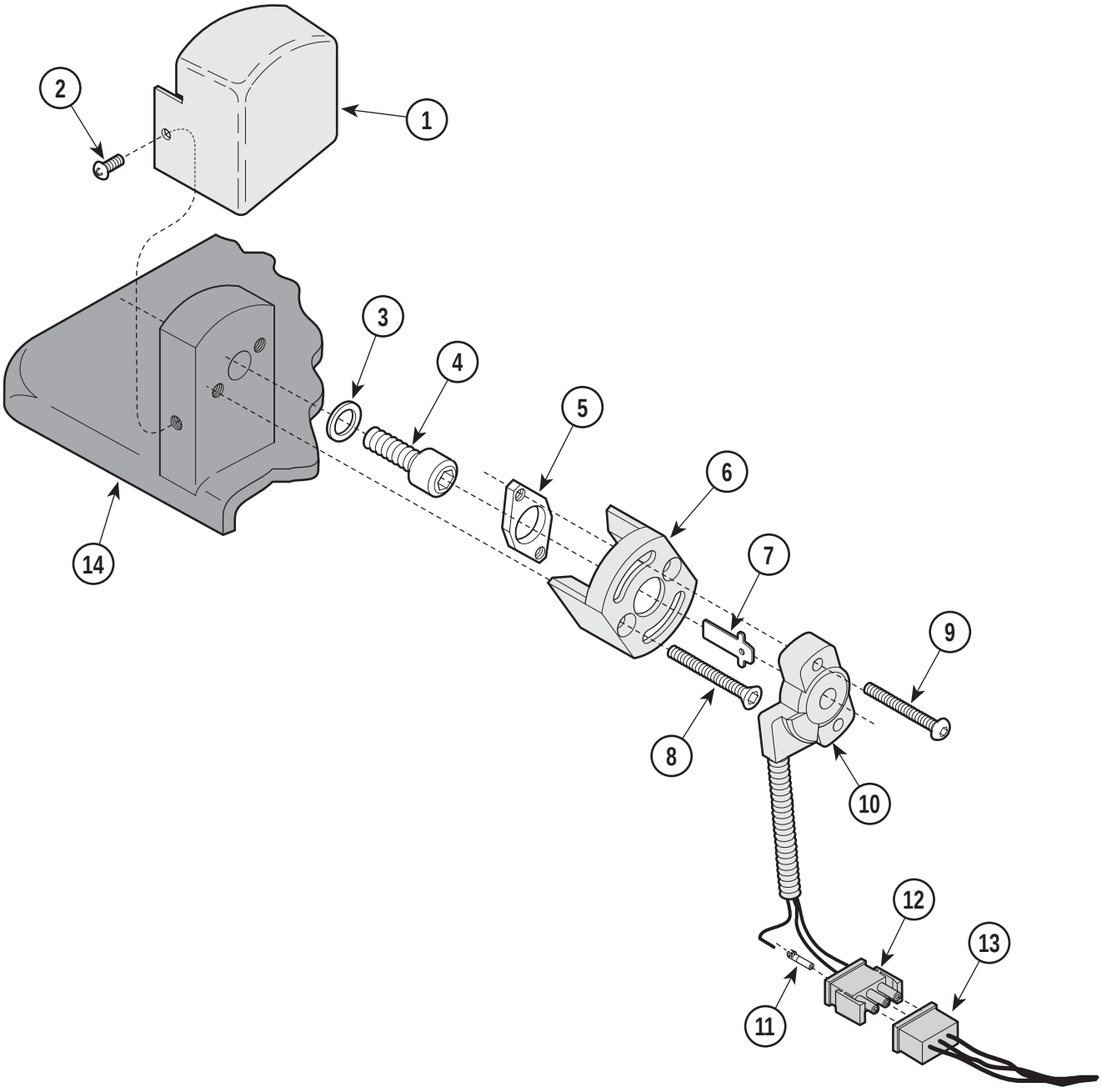
Tilt Sensor Components



MA346600

Used on units with Serial Number GV1000, JY1000, HZ1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
1	053-0854-00	Tilt Sensor Cover	1
2	040-0010-47	Screw	1
3	053-0858-00	Nylon Washer	1
4		Screw (Refer to Seat Components" Elsewhere)	1
5	050-3870-00	Sensor Mount Plate	1
6	053-0853-00	Position Sensor Mount	1
7	050-3695-00	5/16 Hex Drive	1
8	040-0008-49	Screw (Apply Loctite #042-0024-02)	2
9	040-0008-93	Screw (Apply Loctite #042-0024-02)	2
10	002-0563-00	Rotary Position Sensor Assembly (Includes Items 11 & 12)	1
11	• 015-0513-00	• Pin Terminal	3
12	• 015-0512-02	• Connector (3 Circuit)	1
13		Sensor Wiring Harness (Refer to "Wiring Diagram" Elsewhere)	Ref
14		Column Adapter Weldment (Refer to "Seat Components" Elsewhere)	Ref

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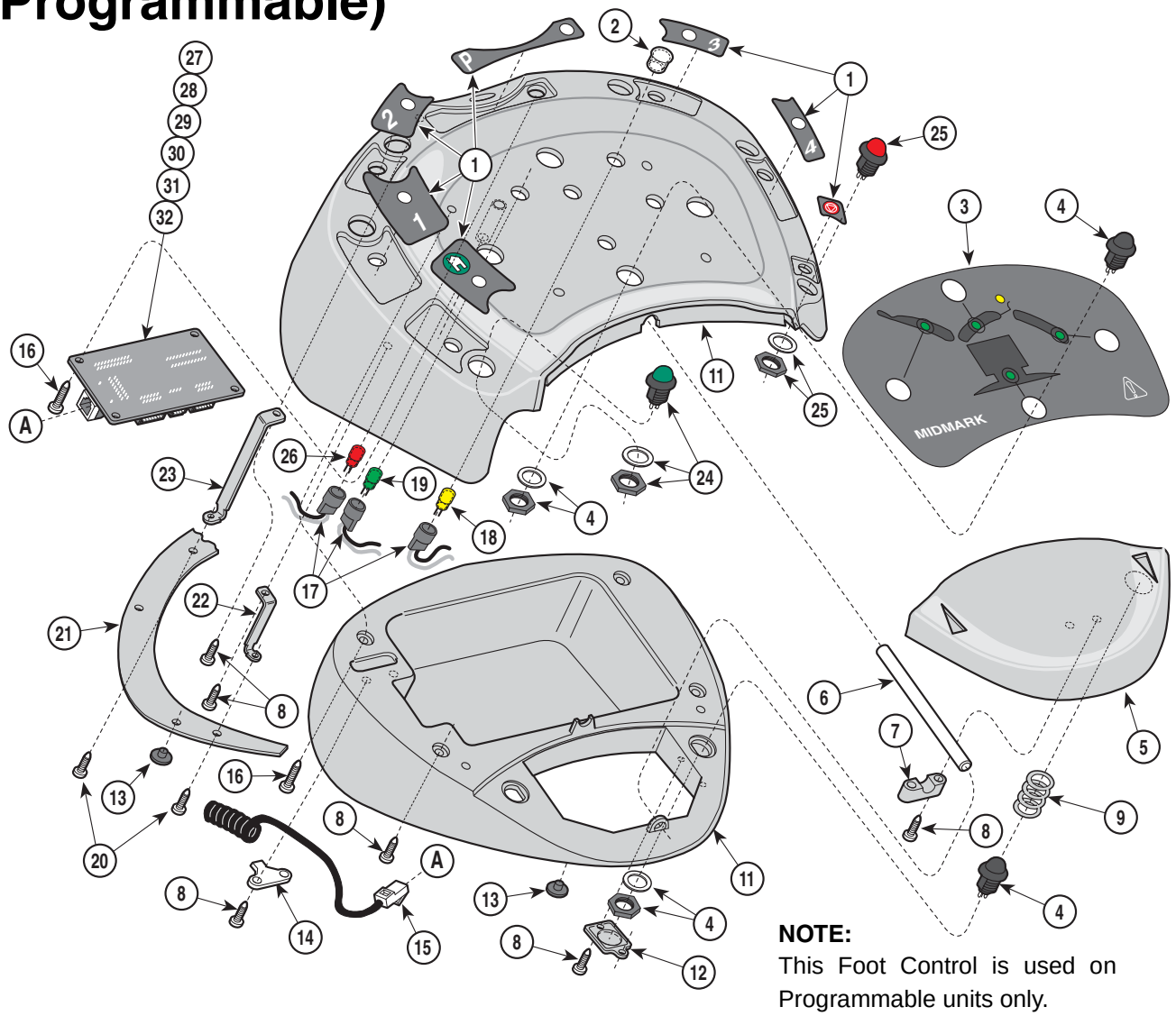
Foot Control Assembly (Programmable)



MA43300

Used on units with Serial Number HZ1000, JY1000 and LS1000 thru Present

Item	Part No.	Description	Qty.
	9A236001	4 Position Footswitch-Programmable (Includes Items 1 thru 32)	1
1	• 061-0674-00	• Footswitch Decal Set	1
2	• 015-1211-00	• Conxrite Lens	11
3	• 061-0673-00	• Foot Switch Label	1
4	• 015-1230-02	• Switch-Black [8” Leads] (Incl. Nut)	11
	• • 015-1205-03	• • Black Cap	1
5	• 053-0918-00	• Foot Control Pedal	1
6	• 057-0468-00	• Pivot Shaft	1
7	• 053-0921-00	• Pedal Cap	2
8	• 042-0168-00	• Screw	16
9	• 025-0054-01	• Compression Spring	2
10	• 053-0920-00	• Programmable Foot Control Top	1
11	• 053-0917-00	• Foot Control Base	1
12	• 053-0940-00	• Switch Cover	2
13	• 053-0947-00	• Stem Bumper	13
14	• 050-4028-00	• Strain Relief Bracket	1
15	• 015-0839-00	• Cord Set	1
16	• 040-0168-01	• Screw	6
17	• 015-1218-00	• Conxrite Connector Assy [4” Leads]	7
	• 015-1218-01	• Conxrite Connector Assy [8” Leads]	4
18	• 015-1235-01	• Yellow LED	1
19	• 015-1235-00	• Green LED	9
20	• 040-0006-76	• Screw	4
21	• 050-4077-00	• Bottom Cover	1
22	• 050-4075-00	• Side Bracket	2
23	• 050-4076-00	• L. H. Front Bracket (Shown)	1
	• 050-4076-01	• R. H. Front Bracket (Not Shown)	1
24	• 015-1230-04	• Switch-Green [5” Leads] (Incl. Nut)	1
	• • 015-1205-05	• • Green Cap	1
25	• 015-1230-03	• Switch-Red [5” Leads] (Incl. Nut)	1
	• • 015-1205-04	• • Red Cap	1
26	• 015-1235-02	• Red LED	1
27	• 015-1168-03	• Programmable Foot Control PC Board	1
28	• 015-0865-01	• 10 Position Connector (Not Shown)	1
29	• 015-0865-02	• 12 Position Connector (Not Shown)	1
30	• 015-0865-03	• 24 Position Connector (Not Shown)	1
31	• 015-1231-00	• 4 Position Recept. Hsg. (NotShown)	1
32	• 015-0013-02	• Cable Tie (NotShown)	1

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Return To Table Of Contents

Return To Table Of Contents

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Return To Table Of Contents

FAX ORDERING FORM

(SERVICE PARTS ONLY)

NOTES:

- **ALL BLOCKED AREAS MUST BE COMPLETED.**
- **USE FOR NON-WARRANTY FAX ORDERS ONLY. WARRANTY ORDERS MUST BE TELEPHONED IN (1-800-MIDMARK).**

ATTENTION: SERVICE DEPARTMENT FAX#: 877-249-1793

ACCT #: _____ **P.O. #:** _____ **DATE:** _____

NAME: _____ **SHIP TO:** _____

ADDRESS: _____

CITY, ST.: _____

CONTACT: _____

PHONE: _____

☐ **NON-EMERGENCY ORDER - TO SHIP WITHIN 72 HOURS IF PART(S) IN STOCK.**

☐ **EMERGENCY ORDER - TO SHIP WITHIN 24 HOURS IF PART(S) IN STOCK (IF ORDER IS RECEIVED BEFORE 1:00 P.M. E.S.T).**

SEND NOTIFICATION IF PARTS ARE NOT AVAILABLE TO SHIP WITHIN 24 HOURS VIA E-MAIL OR FAX TO: _____

METHOD OF SHIPMENT

OTHER _____

UPS	FED EX
☐ NEXT DAY A.M.	☐ NEXT DAY A.M.
☐ NEXT DAY P.M.	☐ NEXT DAY P.M.
☐ 2ND DAY	☐ 2ND DAY
☐ GROUND	☐ ECONOMY

QTY.	PART #	DESCRIPTION (SPECIFY COLOR OF ITEM IF APPLICABLE)	COLOR CODE	PRICE/PER

Return To Table Of Contents

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P.O. Box 286
Versailles, Ohio 45380-0286
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